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*Sir G. G. Scott's Lectures at the Royal Academy.**

ON THE DOME.

I T has been my lot to deliver my lectures from this chair in groups so very detached from one another as to render it impossible for my hearers to follow them as a continuous series. In spite, however, of this disadvantage, I purpose to make my present lecture form a natural sequence to the last which I had the pleasure of delivering, though this was read three years ago.

My last course was on "Arched Construction," and my last *lectures* were on "Vaulting." My present one will carry on the same subject into its culminating development, "The Dome."

Strongly as my tendencies towards our own Mediæval architecture draw me towards the modes of vaulting which prevail in our own ancient buildings, and which formed the subject of my later lectures, I am bound to admit that the noblest of all forms by which a space can be covered is the dome; and, much more than this, that of all architectural forms it is the most sublime and the most poetic, and is susceptible of and demands the highest artistic treatment. I deplore, therefore, its non-existence in our old English architecture.

This regret, however, is diminished by the abundant evidence we possess that the dome, though absent from English buildings, was by no means held to be alien from the contemporary architecture of neighbouring countries, inasmuch as we possess it in highly-developed forms over a large part of France, in Germany, and in Italy, erected at the same periods with many of our great Mediæval edifices.

If, then, I am departing from the line I had been taking in tracing out the history of old English architecture, I am not only supplying a *hiātus* in that history, but I trust that I may be able to offer suggestions for a more practical object,—the supplying of that *hiātus* in our revived and redeveloped neo-Mediæval style.

In a former lecture, after defining a vault as the covering of a rectilinear space produced by the motion of an arch parallel to itself, I defined a dome as the covering of a *circular* space, produced by the revolution of an arch round its central vertical axis. It follows that if the arch so revolving is semicircular, the resulting dome is a hemisphere.

The revolving arch may, however, be of any form which an arch can assume. It may be elliptical, parabolic, hyperbolic, cycloidal; or it may be a pointed, a horseshoe, or an ogee arch. Any one of these, or other forms, of arch revolving on its centre will generate a dome of its own sectional form. The *plan*, too, in spite of my definition, need not be a circle. It may be an ellipse, or of other forms.

I will not at this stage admit of square-planned, polygonal, or other straight-sided domes, because it may be doubted whether they are genuine domes at all, or whether they are not figures resulting from the intersection of a certain number of ordinary vaults. Anyhow, these are not generated by the revolution of an arch; so that *if* they are domes, my definition is at fault.

Simple, however, as is the hemispherical dome, it does not appear to have been historically the primæval type; for, strange to say, the earliest known domes assume in section the form of a lofty pointed arch. I refer especially to that of the supposed tomb of Agamemnon at Mycenæ, and also to some portrayed on the Assyrian sculptures.

These would hardly come within the range of this lecture, were it not so curious a fact that the earliest form of the dome foreshadows the very use to which I would now especially desire to accommodate it.

It is easy to perceive why the pointed arch was adopted in these primæval domes. They were not built with radiating joints, but in overhanging courses; and it will readily be seen, on comparing their sections, that, for this mode of construction, the pointed arch is much more favourable than the circular, while, as soon as ever the radiating system was adopted, the semicircle at once became the simplest and most obvious section.

It is, however, strange to observe how little has come down to us of the history of domes. From the tomb of Agamemnon,—some eleven centuries before the Christian æra,—we have scarcely any certain evidences of their history till we arrive at the Pantheon, erected in the reign of Augustus,—or, as Mr. Fergusson thinks, considerably later. Yet, as that dome is still the widest built of solid materials which exists, and as, both in its construction and its architecture, it is in a high degree artificial, and evinces a period of advanced development, it follows that it must be the representative of a long series of antecedent domes, progressing from the crude idea onwards to this, the very highest developed form of the simple dome, for we shall presently see that there are other forms scarcely foreshadowed by even this magnificent structure.

I may here remark that the dome, like the arch and the vault, having great outward pressure, requires either a vast amount of sustaining wall carried up considerably above the springing level, or, in the absence of this, a tie of metal at, or somewhat above, its springing, or perhaps several of such ties at different heights. Unlike, however, the arch and the vault, it is independent of a keystone, each circular course of its structure forming a horizontal arch and keying itself. It may consequently be erected without the aid of centering, and may be discontinued at any level, leaving a central opening or *eye*.

The Pantheon is the great type of Roman domes. It is a simple rotunda of 142 ft. internal diameter; the wall being some 20 ft. thick. The wall is about 72 ft. high to the springing of the dome, and continues above that level about 28 ft. more.

The dome is a semicircle, but has an open eye at its apex of nearly 30 ft. in diameter. The dome, as viewed externally, is buried by the wall, which rises above its springing to fully a third of its height, and above this rises a sort of attic, crowned by six *gradini*, burying nearly an equal height; so that the dome, as an external feature, is far from conspicuous, appearing as a mere flattened disk. Internally, however, it forms a covering of the noblest character. Its internal surface is deeply coffered by panels of four orders in depth, dividing the circumference into twenty-eight parts, and its height up to about two-thirds of the distance from the springing to the crown into five parts, the upper portion being plain. These vast panels or coffers, the larger range of which exceed 12 ft. in diameter, are curiously arranged as to their sectional recessing, so as to appear perfectly symmetrical to the eye of a spectator standing beneath the centre of the dome.

The wall up to the springing of the dome is beautifully decorated with rich architecture in marbling of varied colour; and it cannot be doubted that the cupola,—the very soul of the design,—was embellished in a manner fully proportioned to the beauty of its sustaining wall-indeed, it is thought to have been coated with gilded bronze. When thus perfect, it must have formed an interior of surprising beauty; lighted as it was solely through the central eye, and the light tempered by the linen veil stretched across its rich bronze cornice, which still remains round the opening, and retains vestiges of gilding.

The Pantheon can scarcely be called a *daring* effort of construction, because its vast solidity seems to defy all doubts as to its duration. It would be, however, absurd to suppose it to have been an *early* effort, for it is, as I have already said, so artificial in its construction, as clearly to prove it to be the result of long-continued practice.

The walls which I have described as being 20 ft. thick, are so only in theory; for, practically, they are hollowed into innumerable cells, some of them forming beautiful architectural recesses, and others merely constructional hollows.

The dome itself is constructed in a manner evincing long-continued practice; for it differs *toto cælo* from the normal mode of construction. It is shown differently by different authors; in fact, it has probably never been sufficiently exposed to obtain complete information as to its curiously-complicated construction. As far, however, as I can ascertain, it seems to be in two thicknesses. The inner thickness consists of the framework of the coffers, which is of brick, and the filling in of the coffers, which is of rubble or concrete. This would form the centreing on which the outer shell was built, which is a curious tissue of arches, each rising from the crowns of those below it, and so disposed as to concentrate the pressure upon points in the wall which intervene between the cells. The spaces between these arches are filled in (so far as I can gather) with rubble or concrete. The whole was probably covered externally with plates of bronze, or of marble.

The next antique Roman dome which I shall notice is that of the so-called Temple of Minerva Medica, so named from the discovery of a statue of that deity among its ruins, but now supposed by some to have been the great hall of public baths.

This building greatly resembles the Pantheon in its general idea, but differs in this essential particular,—that its surrounding wall is not circular, but decagonal.

At a later date, as we shall presently see, this peculiarity would have been seized upon as the suggestion of another type of dome of which I shall have subsequently to treat. As a matter of fact, the transition from the polygonal prism below to the nearly hemispherical dome above, is got over by "rule of thumb," rather than on any true system. The vertical sides of the wall do intersect the dome in arched forms; but neither are these forms the true sections of a plane with a sphere, nor have they been used as architectural features, as in later times; but have been afterwards, so far as I can judge, obliterated by the incrustation of the dome with plaster, so as to slur over a union of forms which the architect had fallen into accidentally without appreciating its true results. The dome is surrounded by *gradini*, much as in the Pantheon. It is not lighted by an eye, but by ten windows, surrounding what we should call the clearstory. Beneath these are ten arches piercing the sur-

* We have displaced some articles in order that we may publish Sir G. G. Scott's concluding course of Lectures in full. All the previous lectures delivered by the Professor will be found in our columns.

rounding wall; indeed, reducing it to small angle piers. One of these is devoted to the entrance, the other nine to semicircular recesses, of which five seem to have contained basins for water, and four to have opened by means of colonnades into exedræ, or surrounding buildings. It may be mentioned that this form was, in after-times, extensively imitated. The span of this dome is about 80 ft. Its date is not known. Not unlike this is the Temple of Venus near Baiæ, though here the dome is cut into cells like a conch,—a still near approach in effect to the pendentive dome.

There are other domes not differing materially from those already described, but which it would extend my lecture unduly to dwell upon. One called the Torre dei Schiavi, in the Via Prænestina, is like the Pantheon on a very small scale, though lighted by round clearstory windows, instead of a central eye.

The Temples of Vesta, both at Rome and at Tivoli, consist of circular walls surrounded externally by a peristyle. The cell of each is supposed to have been covered by a dome, though roofed over. A parallel case, though in a more complex form, exists in what is called the Temple of Jupiter in Diocleslan's Palace at Spalatro. In this case, the exterior of the cell with its peristyle is octagonal, but the interior, with the dome, *round*. The latter has a complicated construction of fan-shaped arches throughout, scarcely any part being constructed of horizontal courses.

Next, perhaps, in date, yet at once displaying similarity of idea with a significant change in the carrying out, is the tomb of St. Constantia, the daughter of Constantine.

A Christian church, in its early form, has been familiarly described as the Pagan Temple turned inside out. To convert the ideal temple into the ideal church the wall and the colonnade must change places. So completely is this the case that some of the earlier commentators on Vitruvius were completely puzzled between the wall of the temple and the peristyle. They assumed that the latter *must* be *within* the wall, as in their own churches, and based their remarks on this supposition.

The comparison between these almost contemporary works,—the Temple of Diocleslan at Spalatro and the Tomb of St. Constantia at Rome,—exactly illustrates this change. In the one, the solid wall forms the circle and carries the dome, and the colonnade is external; in the other, the colonnade forms the inner circle and carries the dome, while the wall becomes external,—an *aisle* taking the place of the peristyle. The colonnade is *doubled* to support the massive clearstory whence the dome springs, and the whole assumes the type of one form of Christian church, which henceforth became of frequent occurrence. The dome in this instance ceases to be an external feature, being covered over by a conical roof. I may add that the peristyle is repeated in the old manner as an additional feature beyond the wall of the aisle.

The Baptistery at Nocera is similar in distribution to the tomb of St. Constantia, and may be of similar date. It is wider, however, and loses much beauty by the omission of the clearstory and the admission of light through the haunches of the dome.

Among the innumerable remains of domes of the older type, I will only mention one more before proceeding to the second branch of this subject, to which it, in fact, properly belongs. That to which I allude is the Baptistery at Ravenna, erected, as it is supposed, about the year 450.

This is a very charming building, octagonal in form, yet covered over by a hemispherical dome. Though having no surrounding aisle, the design of its sides seems derived from the aisle and clearstory; indeed, it has a clearstory, though the arcade below is rather rudimentary than real.

The dome, like that last alluded to, is covered externally by a sloping roof.

The special feature, however, in this dome is that it rests upon an octagonal wall or rather upon eight arches.

We shall presently see how this was effected in subsequent times, and I will not anticipate that subject, but will content myself with mentioning that this seems to anticipate the Byzantine domes of the succeeding century, as had been the case in two instances to which I shall have to refer, and as had been nearly the case in the Temple of Minerva Medica.

The domes which we have hitherto considered are exclusively and of necessity carried by circular or other continuous walls. They are consequently supported uniformly throughout their entire circumference, and their use is necessarily limited to the coverings of circular, *quasi*-circular, or polygonal buildings. Had no further development been attained, it would ever have been felt to be a sad deficiency in the scope of architectural facilities, that the noblest form of covering should be limited to the least usual and, for most purposes, the least convenient form of apartment. We are happily *as far as possible* from being left in this dilemma. A very simple application of geometrical thought opened a way by which almost *any* reasonable form of building may be covered by a dome or by a series or group of domes.

I will endeavour, as simply as I am able, to explain this important development.

It is a property of the sphere that every possible plane section of it is a *circle*. It follows that every vertical section of a hemispherical or segmental dome assumes the form of a semicircular or segmental arch. If, therefore, a square be inscribed in the base of a dome, and walls be built on that square and continued up till they meet the dome, they will intersect with it in four semicircles. If, instead of *walls*, you build *arches* on the sides of that square, these arches will coincide with the curve of the dome where they meet it; and, if strong enough, will carry the portion of the dome remaining between them. If, again, instead of arches, you suppose the dome intersected on the lines of the inscribed square by *vaults* at right angles to those sides, the result will be the same.

In the first case we have a dome, or a portion of one, covering a square apartment; in the second we have the same covering standing on arches open towards the exterior; in the third we have a dome covering the intersection of two barrel vaults just as is more usually done by groining. The process, however, is not limited to a *square*: it is equally applicable to the octagon or any other polygon,—indeed, to any figure which can be inscribed in a circle. Nor is it necessary that the inscribed figure should be *complete*; for remnants of the circle may equally well be left between the arches or walls.

Thus, a circular space may be intersected by four vaults of less width than the sides of a square, leaving portions of the circular walls remaining between them.

The dome, again, may as well be *segmental* in section as *semicircular*; in which case the arches supporting it will also be segmental.

Again, the figure inscribed need not be *equilateral*; so that *oblong* compartments, such as those customary in the nave of a church, may be domically vaulted.

In all the cases which I have enumerated, I have supposed the result to be literally a *portion of the original dome*. As it happens, however, we have but few ancient examples of so strict an adherence to principle, though in modern works they are more frequent. The purest specimen I know of (if I judge rightly from drawings) is the dome of the little Church of St. Nasario and Celso, at Ravenna,—the mausoleum of Galla Placidia and of her two husbands, the emperors Honorius and Valentinian II. This is a dome such as I described as standing between four walls which intersect it in the form of arches.

The next step beyond this was a very important one, as to beauty of effect. I refer to the practice of drawing a circle by means of a moulding on the surface of the dome,—touching the crowns of the arches: this is not only ornamental, but it has the effect of emphasizing the first completed course of stones, and perhaps even of strengthening it; and it has the further effect of defining the spherical triangles between the arches, which, when thus gifted with a separate existence, receive the name of "*pendentives*"; whence this entire class of domes are called "*pendentive* domes."

The earliest specimen of this is probably the little tomb in the Via Nomentana, at Rome, which, though probably of earlier date than the Church of St. Nasario and Celso, carries out the pendentive principle to its full development, just as we see it treated at a later period in the double gate and the Golden Gate of the Temple area at Jerusalem, most probably erected under Justinian. All these domes are segmental in section.

The pure form, however of a pendentive dome,—that is to say, the form in which the pendentives and the upper portion are really veritable parts of one and the same original dome in the plan or base of which the rectilinear figure is inscribed,—was not long adhered to. It was soon felt that the disk enclosed by the circular moulding looked *flat* and *ineffective*; and the idea early suggested itself of converting the circular moulding into a massive cornice; raising upon it a new dome of such proportions as should approve themselves to the eye; and allowing nought but the pendentives to remain of the original dome.

No bolder idea was ever introduced in constructive architecture; for now the dome, instead of being, as at the Pantheon, supported firmly by a solid wall throughout *every* portion of its circumference, finds its conditions *absolutely reversed*; for in *no* portion of its circumference has it now a solid support, but all floats upon vacuity, suggesting the poetical similitude to Procopius, that the dome of St. Sophia appeared, as if suspended, by a chain from heaven.

Pendentive domes, in neither of their typical forms, seem to have been frequently or customarily made use of in the more genuine classic ages, though in modern times they have both been very wisely adopted into the revived classic styles. They were, in fact, the special characteristic and the great glory of the Byzantinestyle.

Mr. Freeman, on this subject, remarks:—"The offspring of the arch is the vault; of the vault, the cupola; and this majestic ornament is the very life and soul of Byzantine architecture, to which every other feature is subordinate. Its use had hitherto been mainly confined to circular buildings. To make it the central point of a Christian temple was a grand and bold idea, and one which involved a complete revolution in the existing principles of architecture. . . . . And not only did the grand cupola crown the whole pile; but the smaller portions are often covered with smaller domes and semi-domes. . . . . The eye habituated to the long naves . . . . of our own great churches, is totally bewildered with so huge a pile, with apses and semidomes 'sprouting out,' to use the expression of Mr. Hope, in every direction, and all circling round the vast central cupola, like tributary rulers encircling an imperial throne."

It is thought by some that the Byzantines borrowed the pendentive dome from Persia; but this seems insusceptible of proof; indeed, it exists of earlier age in Italy. It is more certain that, having once discovered its wonderful utility it was communicated by them to every region to which their influence extended; and that, having been learned from them by the Mahomedans, it became the conspicuous feature of the architecture, which extended continuously from the Bay of Bengal to the Atlantic.

The next development I will mention is the raising of the dome proper upon a drum or circular wall, elevated upon the pendentives or corbels, so as to convert it into a species of tower. This seems to have been the first step by which, in later times the dome came to be made a conspicuous external feature, though rather at the sacrifice of internal beauty.

It is, in fact, the weakest point in the dome, æsthetically considered, that the same dome cannot be made artistically perfect both within and without. If its height be limited to what looks thoroughly well from within, it is so low in its external aspect as to have little artistic value; while, if raised so high as to be an important external feature, it is only seen by a painful effort from within. This is manifest even in the rotunda, where the dome rises from a circular wall, as in the Pantheon and the Temple of Minerva Medica; but it becomes much more so in a pendentive dome, where the angles are externally incumbered with large masses of masonry. In the earlier Byzantine buildings, we accordingly find the dome to have been viewed almost solely as an internal feature, and its exterior very much neglected; and in the case of St. Sophia itself, no one would be prepared by its low, heavy external aspect for the unrivalled glories of its interior. Many of the old architects, in fact, gave up the external form altogether, covering over the dome, as at Parma, &c., by an ordinary sloping roof.

The change I have last chronicled, the interposition of a circular wall between the pendentive and the dome, though by no means in all cases leading to the result I am referring to, was unquestionably the origin of the treatment of the dome as an important external feature. It was, in fact, the elevation of the rotunda upon the top of the pendentives. Unhappily, however, it had at once the effect of lifting up the dome above the level favourable to its internal effect; while, if erected on four arches only, the weight became so serious as usually to limit its use to domes of very moderate size.

A large number of domes thus raised high above their pendentives or corbellings, are really of a class whose claims to the name of dome are somewhat ambiguous. I refer to those whose horizontal section is not circular, but polygonal. Strictly speaking, this is a variety of groined-vault: it is generated by the intersection of several barrel-vaults, springing from the horizontal tops from the surrounding walls. Now, my definition of a dome was a vault generated by the revolution of an arch on its vertical axis. If this were an exhaustive definition, it would follow that the vaults under consideration are no domes at all; yet they look so much like them, and as the number of the sides of the polygon increases, actually approach so closely to the genuine dome, that it would be affectation to deny them the name. They may form the covering of any rectilinear figure at all approaching to regularity of form, as the triangle, the square, the canted square, polygons either regular or elongated, oblongs or parallelograms of any kind; but the usual form is the octagon or other polygon; and for our general purpose it may be best to limit them to figures capable of being inscribed in a circle or an ellipse.

I have introduced this variety of dome as occurring in those which are raised high above their pendentives or corbels. They occur, however, in numerous positions. The greatest I know of is that of the cathedral at Florence, of which I shall have to speak more in detail in my next lecture.

But to return to the pendentive dome. The pendentive dome, though occasionally used at an earlier period, established itself as the leading feature of a style about the time of the Emperor Justinian, and its central seat was Constantinople. The earliest, or *about* the earliest, church now remaining in that city seems to be that of SS. Sergius and Bacchus. Its dome is supported by an octagon. It appears itself to be concoidal in its horizontal section, and to be supported on sixteen small pendentives. It bears considerable resemblance to the Temple of Minerva Medica, but is really less developed than the Baptistery at Ravenna, which dates fully half a century earlier.

Contemporary with this was the Church of the Apostles, also erected by Justinian, but now destroyed. It showed, however, according to the description of it by Procopius, an immense advance upon that last named; for, while in one the dome was carried by an octagonal wall, thus showing no practical advance upon the antique form of dome, in the latter, a vast cruciform building was covered by five domes, which is just the advantage which the pendentive system affords; for, when the base of a dome is cut into a square by four arches, those arches may aid in the support of other domes beyond, and thus any space may be covered over by a series or a group of domes. This last church, then, was the true type of advanced domical structure.

The great glory, however, of this age and of domical structure of this class (for it has never again been equalled) is the Church of St. Sophia, or of Sacred Wisdom, erected by the same Emperor as the Metropolitan or Patriarchal Cathedral of the Eastern Church.

The plan of this church differs in ideal, and yet more in fact, from the contemporary church last referred to.

The ideal of each is a cross with a central dome. The difference is that in the Church of the Apostles the limbs of the cross were each covered by a complete dome,—of equal dimensions with the central one; those of St. Sophia are covered each by a *semi*-dome only,—of equal diameter with the arches carrying the central dome; so that if we consider the latter to spring from the top of its pendentives, which it in effect does, its springing is on a level with the crown of its surrounding semi-domes.

In reality, however, this ideal is not carried out to completion, as only two of the semi-domes have been erected. This incompleteness, however, is greatly more than compensated; first, by the vastness of the scale,—the central dome, if measured on the diagonal, being 150 ft. in diameter,—and, secondly, by other semi-domical projections branching out from the walls which support the great semi-domes, three from each, excepting that on the western side one is devoted to the entrance, and is not domed. Even these secondary projections are mostly arcaded, so as to allow the eye to pass onward into a yet inner chamber: so that, simple as is the primary ideal, the actual effect is one of great intricacy and of continuous gradation of parts, from the arcades last alluded to up to the stupendous dome which hangs with little apparent support, like a vast bubble, over the centre; or, as Procopius, who witnessed its erection, described it,—as if suspended by a chain from heaven.

The dome is lighted by forty small windows which pierce it immediately above the cornice which crowns its pendentives, and which, by subdividing its lower part into narrow piers, increases the feeling of its being supported by its own buoyancy.

The interior thus generated,—covered almost wholly by domes or portions of them, each rising in succession higher and higher towards this floating hemisphere in the centre,—and so arranged that one shall open out the view towards the others, and that nearly the entire system of vaulting may be viewed at a single glance, appears to me to be, in some respects, the noblest which has ever been designed, as it was certainly the most daring which, up to that time at least, if not absolutely, had ever been constructed.

Its beauties are of a contrary kind to those of that noblest interior of antiquity, the Great Hall of Karnack, or to those of later ages, the Gothic cathedrals. Both of those gain beauty of effect and an increase of apparent extent through the endless intricacies of their perspective, and the changes of aspect at every step, arising from the multitude of their columns, and from no possible view showing the whole interior at once. This, on the contrary, trusts to the very reverse of all this,—the absence of all interruptions, and the studious distribution of parts, so that no one conceals another, but that the entire building shall be grasped at once by the eye.

I have not seen St. Sophia's, though I long to do so, if only to view a form of artistic treatment so different from what I delight in in our own cathedrals. The internal effect does not, however, trust *exclusively* to this panoptical theory. The contrary theory was too well known from the Christian basilica to be lost sight of in this the greatest of Christian temples. It was, in point of fact, *added* to the other by means of arcades, both in the sides of the nave and in its apsidal projections, opening out mysterious perspectives into the inner recesses of the temple. This union of the more palpable with the more mysterious; of the vast unbroken expanse with the intricately broken perspective, must, as it appears to me, and as I judge from representations, produce an impression more astounding than that of almost any other building; but, when we consider the whole as clothed with the richest beauties of surface; the piers encrusted with inlaid marbles of every hue; its arcades of marble gorgeously carved; its domes and vaultings resplendent with gold mosaic, interspersed with solemn figures; and its wide-spreading floors rich with marble tesselation, over which the buoyant dome floats self-supported, and seems to sail over you as you move, I cannot conceive of anything more astonishing, more solemn, or more magnificent. Well might its Imperial founder exclaim, when, with pardonable exultation, he viewed the result of his costly aspirations,—"Glory be to God, who hath thought me worthy to accomplish so great a work,—*I have vanquished thee, O Solomon!*"

I have dwelt longer on my description of this wonderful building because it is *facile princeps* among structures as the pendentive domical principle, just as the Pantheon had been among those with the simple dome; and as, in after ages, was St. Peter's among those whose domes soared upwards as lofty towers.

I must here close my lecture, leaving the continuation of my descriptive sketch of the history of the cupola, and such remarks as I may have to offer on its uses, its practical application, and its future development, to be followed up in my next.

THE WORKS AT THE ALEXANDRA PARK AND PALACE.

AFTER the unsuccessful efforts made to obtain possession of the Alexandra Palace and the extensive park and grounds connected with it, first by an attempt to form a tontine, and subsequently by the late Lord Mayor and the gentlemen known as the Mansion House Committee, it now appears that it has at length been determined to open the building and grounds upon the same principle as that which has for several years past characterised the Sydenham establishment; and for the purpose of carrying out this object some hundreds of artizans have for several months past been employed in extensive alterations in the interior of the building, and also in the grounds.

As the Palace is announced to be opened in May next, a notice of the works now in progress will perhaps be interesting. Amongst the constructive works going forward in the interior of the structure, a number of plant and flower beds are in course of formation along each side of the main central avenue or nave, from one extremity of the building to the other. These beds, which are oblong in form, are inclosed in walls of Portland cement, whilst at the ends of each bed, running the entire length of the avenue, are pedestals of the same material, on which statuary will be placed, the beds themselves being ornamented with choice trees, plants, and flowers. Fountains, also inclosed in Portland cement, are likewise in course of construction at different points along the avenue. The large pedestals at the several angles of the central transept and dome, and other portions of the interior, supporting colossal statuary, have been artistically decorated, while the statues themselves have also been renovated. The large and powerful organ in the north side of the centre transept has also been elaborately decorated, the capacious and towering pipes on each side having been illuminated and gilt on a mauve ground, whilst the pipes in the centre have a full gilt ground, with enrichments in varied colours. The already spacious orchestra in front of the organ has been considerably enlarged, and now extends the entire width of the transept, its capacity being sufficiently large to accommodate upwards of 1,000 performers.

The space underneath the galleries on each side of the centre avenue is intended to be filled with figures, clothed in the costumes of various countries. These several figures will be placed on an elevation about 3 ft. above the ground-level, and staging for their reception is now in course of erection.

The north-east and north-west transepts respectively are both being converted to different purposes from those for which they were intended when the building was first erected, and the works going forward in these portions of the interior are perhaps the heaviest of the whole. The north-east transept is being entirely converted into an immense theatrical stage, with spacious dressing-rooms, wardrobes, and other apartments, for dramatic and operatic performances. This portion of the reconstructed interior has been designed by Messrs. Grieve & Son, and is being erected under their immediate personal superintendence. The large dimensions of the stage and the apartments in connexion with it will be seen when it is stated that they occupy the entire area of the transept. The proscenium opening of the stage is 36 ft. in width by 37 ft. in height, whilst its extreme width is 85 ft., and 60 ft. in depth from the front of the proscenium. There is a depth of 22 ft. beneath the stage for the working of the requisite machinery, and in connexion with the machinery it may be noticed that for its safe working and in order to prevent accidents by persons falling through the stage when the traps are opening, what is called a "lock-iron," the invention of Mr. Grieve, has for the first time been introduced. The height from the stage-level to the gridiron floor above is 77 ft., and the extreme height to roof, 100 ft. The dressing-rooms, wardrobes, retiring-rooms, offices, lavatories, and other conveniences are at the rear of the stage, from which they are divided by a partition-wall and corridors extending across the entire width. They consist of the ground-floor and story above, approached by spacious staircases, the number and size of the apartments on each floor being uniform. The front of the stage on each side of the proscenium will be handsomely decorated. Ornamental pilasters and mouldings in Portland cement, with carved capitals, will be carried up to a considerable height above the proscenium, and archway springing from the capitals. The space in front, between the proscenium and the archway over it, will be filled in by a large fresco, executed by Mr. J. Absolon, of the Society of Painters in Water Colours. The auditorium space in connexion with the theatre will be that portion of the main avenue immediately in front, with the south-east transept opposite, together with the galleries immediately adjoining, and on theatrical performances taking place that portion of the interior of the palace set apart for the audience will be screened off from the rest of the building.

The concert-room, in course of construction in the north-west transept, will be entirely cut off from the adjoining centre avenue and the south-

west transept, by a main wall or partition carried up to the top of the building, which is now being erected, and which will enclose the area within the north-west transept. The orchestra will be at the south side of the transept, resting upon main walls and columns, now being built, and at the rear of the orchestra, in the centre, and placed slightly above it, an organ will be erected. Retiring-rooms and other apartments connected with the orchestra are also being constructed on each side. The rest of the space in front of the orchestra northwards, on the ground-floor, as well as the gallery round the transept, will form the auditorium. The circular roof of the transept will be shut out from the concert-room by a new and handsomely-decorated ceiling.

The large and prominent building near the summit of the hill, to the eastward of the palace, which was originally erected for the purposes of a gymnasium, is not to be so utilised. Extensive alterations have been made in the interior, with the intention of converting it into dining and refreshment rooms for visitors to the palace, and it is now well adapted for this purpose. There is a large dining-room, which, it is stated will seat upwards of 1,000 persons, besides numerous smaller rooms for private parties and general refreshment purposes.

Not the least important in the arrangements for opening the palace is the new branch railway from the Great Northern line direct to the building, which is now almost finished, and which will be entirely completed in the course of a few weeks, before the time appointed for the actual opening of the palace. The route to the palace from King's Cross will be by the Edgware and Highgate branch of the Great Northern, which leaves the main line a short distance beyond Finsbury Park. The palace branch, which is about two miles in length, joins the Edgware and Highgate branch not far from the last-named place, and proceeding round to the northwards of Muswell-hill through the valley, by a gradual but continuous gradient, terminates in the park immediately on the north side of the palace, the terrace of the palace forming the roof of the station. The line passes partly through excavations and partly over embankment, and is carried across the valley skirting Muswell-hill by a handsome viaduct consisting of thirteen arches, the entire length of the viaduct being about 500 ft. The viaduct is built of white brick with stone piers, with a blue brick coping. In addition to the viaduct there are also five other bridges. There is an intermediate station between the junction with the Edgware and Highgate line and the palace, a short distance to the west of Muswell-hill. It is a neat and commodious building, containing ladies' and gentlemen's waiting-rooms in addition to the booking-offices. The new branch to the palace has been constructed jointly by the Great Northern Company and the Alexandra Park and Palace proprietors. Access to the palace and park is obtained from the Wood Green station of the Great Northern Company's main line, as well as by the direct branch now being completed; but by the Wood Green route a considerable ascent has to be made through the park before the palace is reached.

The contractors for the works at the palace are Messrs. Kelk & Lucas, Mr. Clemence being the manager in charge; and the contractors for the railway are Messrs. Lucas, Brothers.

ON THE ART OF "SGRAFFITO" DECORATION.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A PAPER "On the Art of 'Sgraffito' Decoration," by Mr. Allen S. Cole, was read at the ordinary general meeting, held on Monday, the 17th, Mr. Thomas H. Wyatt, president, in the chair. We print the pith of it:—

Whilst London contains some of the finest buildings in the world, its miles of shabby brick houses give it a dull air. Coal smoke and fog do not brighten it up, but make what is dull duller. In these times of individuality, cheapness has an uninterrupted sway of its own. The Londoner is free to build the cheapest of houses with bad stock bricks and mortar made chiefly of mud. Perhaps the worst period of cheapness is over; and although London will continue to have acres of little brick streets in the working parts of London, there are signs that Baker-street and Sloane-street in their dull monotony are going out of fashion.

Houses of a rental of 300*l.* a year and upwards have usually a stucco face, and affect some architectural mouldings in cement. At best it is very mean and tasteless. But whilst cheapness must and will prevail as an influential consideration in the erection of houses, I venture to think that the experience of past times shows that there are processes by which even the cheapest brick architecture may be elevated by a little decoration produced at a low price; and I am going to prove this on the present occasion. As an illustration of my precise meaning, I have had a diagram prepared, showing a house front of brick without the vestige of decoration about it. Mr. Moody has prepared a second diagram showing the same house front as it might appear by applying to it a facing of ornamental plaster work, at a cost of say fifty guineas. It is needless for me to say that this method of decoration leaves the style considered to be preferable entirely at the option of the builder, the decorator, or the purchaser, though one dogma should be perhaps laid down in respect to this, namely, that the surface under treatment should be panelled, and the arabesques or ornament placed within the panels. The panels will necessarily follow the prominent constructional lines of the façade, and so will not weaken the appearance of them.

It will no doubt be said that this plaster decoration will become as dirty as the common plaster work which covers modern houses, and that it will require to be protected by paint. This may be so. It should, however, be remembered that at first starting the ground of the sgraffito is of a dark tone, while the upper layer of plaster is white, or light in colour. Therefore the two may become dirty together, but the two colours will remain for a long time in contrast. When they are entirely obliterated the incised ornamentation will always be apparent, and be of service as a decoration in spite of the toning of soot and fogs. It has occurred to me that some modification of the artificial stone manufacture might be usefully adopted in strengthening the plaster, and in perhaps giving it an invisible vitreous coating after the work has been executed, so that from time to time the dirt which would accumulate might be removed from this coating. I have no authority for speaking about such an application, beyond that of my surmises, which go for nothing, since I am no chemist.

At South Kensington various methods of using cement for decorative purposes have been tried by Mr. Moody and the students in training. The practice ground has been the extensive wall surface of the inner side of the new Science Schools, whose façade is in Exhibition-road, opposite to the site of the proposed Natural History Museum.

Sgraffito is the scratching of an ornament upon an intonaco layer applied to a black ground, leaving the white of the intonaco to represent the white forms of the design and the black to represent the black. To fix this preparation of plasters to a wall it is necessary that the wall should be well wetted; in fact, as Cennini has said, "You cannot wet the wall too much." An ordinary "floating" coat of plaster ¾ in. thick is first laid; when this is sufficiently dry,—say in three or four days,—a layer of black plaster not more than ¼ in. thick is then applied; when this latter has settled and is still damp the finishing coat of light-coloured plaster ⅛ in. or less is then laid, according to the delicacy of the work to be executed or the distance at which the sgraffito may be ultimately placed from the eye. This last-named is the "intonaco" or "upper layer" spoken of by Bossi, who, in his "Dictionary of Art Terms and Work," &c., describes "sgraffito" under "sgraffio."

The surface is now prepared for being worked upon, and before the plaster hardens the sgraffito or hatching should be executed. In this respect it will be observed that this method resembles fresco painting, since no more of the surface should be prepared than the artist is able to finish in one day.

Quoting verbatim from Mr. Moody's report on this art, the following is his experience as to the transfer of a design and its subsequent execution on the plaster:—

"Having made a full-sized drawing of the proposed ornament, it can be transferred to the wall by tracing the lines through the paper on to the wet and yielding plaster, or if the drawing is executed in charcoal, it may be printed on the wall by turning its face towards the plaster and rubbing it firmly at the back; then with an ordinary desk penknife, which was found to be the best tool, the artist firmly incises the outline, cutting through the upper layer into but not through the black layer below; he then scrapes away the upper layer and exposes the black wherever black is wanted, leaving the upper layer wherever white is wanted, and in this way any design in two tints can be executed with rapidity and effect. Where large spaces of black occur it is as well to use a broad tool with a square end, which not only removes the upper layer easily and quickly, but gives a tolerably even surface to the layer below. Although designs are very generally executed in black and white, any colours which are permanent when mixed with plaster can of course be used.

Shading by lines can easily be done provided they are not too near together, otherwise the projecting white might be apt to chip off."

As regards the experiment at South Kensington, Mr. Moody says:—

"For the top part of the building (and this also refers to the work down to the first-floor), the first, or floating coat, was composed of 1 part ground selenitic lime to 4 parts of rough sand, and a little plaster of Paris; this coat was three-quarters of an inch thick.

The next, or black layer was composed of 1 part lime, 1½ black oxide of manganese, 2 of Barra shale or clay, and in the upper parts of the building this was three-eighths of an inch thick,—a thickness which was found necessary, at a subsequent stage, to reduce to less than a quarter of an inch.

The third, or finishing coat, was composed of silver sand, lime, and whitening, in equal proportions. This coat was hardly more than 1-16th of an inch thick.

The upper frieze was composed of purple, brown, and a little manganese; the colouring matter being somewhat less in proportion than in the black.

In the second floor, the space above the windows has been divided into panels by a series of styles. These were made in ordinary Portland cement: as the effect was not considered satisfactory, they were afterwards painted maroon with common oil colours.

As the work proceeded, it was discovered that the adherence to the wall in the previous work was in some parts defective, for, on cutting into the plaster in these places, it was seen that the failure was in the first layer. It was first supposed that this arose from the wall not having been sufficiently wetted, or the mortar scraped sufficiently out of the joints, to give a good key to the plaster; and it is not improbable that in the long interval that elapsed between the erection of the carcass and the completion of the building, the walls may have become so dry that they required much more wetting than would have been the case with walls just built.

However, be that as it may,* an experiment with the second, or black layer, proved its expansive powers when setting to be so great, that it may possibly have bowed out with sufficient force to have dragged up the first coat with it. Accordingly, in future work it was determined to reduce its thickness to a minimum. Soap lime was also substituted for selenitic lime in the composition of the black layer.

A change was also made in the first or floating layer, which in future consisted of 1 part selenitic, 2 parts Barra clay, 5 parts coarse sand, but without complete success, as testing the work with a hammer will betray parts that are evidently hollow.

The adherence between the three coats was invariably found to be complete, it was impossible to separate them; indeed, the strength and solidity of the whole slabs or panels were so obvious, that it was thought quite unnecessary to cut them away, although their adherence to the wall was in some places imperfect.

The small panels in the upper part of the decoration above the windows of the first-floor are painted in fresco. Some of the more delicate shadows of the ornament were also painted with a little manganese and water on the coat of plaster, and in some parts, more especially in one of the spaces between the arches on the ground-floor, a whole bay was entirely painted instead of cut. In the centre plaques of the decoration, between the windows, are figures in relief. There are five of these, beginning on the left. The first is modelled entirely in selenitic, sand and whitening in equal proportions. The ground was mixed with yellow ochre; but as this was found to be too soft, the grounds of the other figures were painted with raw sienna in fresco; the second and third figures were mo-

* The selenitic mortar was made by hand, which is stated to be an inferior mode to preparing it in a mill.

delled in the same material as the first; the fourth was roughed out with Beasley's cement, and coated with ¼-inch selenitic; the fifth, the same as No. 4. The above figures are roughly modelled by Mr. Gibbons; their execution did not occupy more than two hours each. The pilasters, with voluto capitals, were made of Beasley's cement.

The great mass of the ornament on the ground floor was throughout executed in the way I have already described. There was, however, a slight modification in the figure-subjects which fill the principal panels.

Of these panels (if we count the half-panels at each end) there are seven. The two half panels and the centre panel are modelled; that to the left is entirely in Portland cement. The panels next to the centre are executed in sgraffito, with shadows in lines, similar to the rest of the work; but in the two panels next to the end ones, three instead of two layers have been laid,—namely, first the ordinary black layer, then a gray layer, and last the ordinary finishing coat. To obtain the shadow we cut through the upper coat only; but when we want to come to the background, we cut through both that and the shadow coat. In this way we have produced the appearance of a drawing with tinted shadows, and in this way no doubt still great variety and refinement could, without much difficulty, be produced in sgraffito; for this work, however, it is necessary to devote very considerable care to the preparation of the design, the exact form of the shadow must be clearly defined, and for this reason the preparation of such designs is a most useful and instructive study, but necessarily adds to the expense of the work.

This latter piece of work closely resembles the chiaro-scuro which was frequently adopted in the sixteenth century in Italy, for decoration of façades, &c.

In concluding this description of the South Kensington experiment, I must mention particularly a successful modification of sgraffito which Mr. Moody has tried.

"Having prepared a maroon ground instead of a finishing coat, scarcely more than 1-16th of an inch thick, a layer was laid of light cement half an inch thick, and having traced the drawing, the outline of the figure was cut straight down to the ground; and, clearing away the waste, a projecting slab of the exact figure wished remained. The face was then carved after the manner of cameo-cutting; and in this way a relief, in some respects better perhaps than if it had been modelled; for the degree of relief is more uniform and sculpturesque, while the figures come more satisfactorily off the ground than they would if it were painted."

I think it is apparent, therefore, that Mr. Moody has more or less availed himself of precedents which exist for the various uses of stucco supplied by Italian artists of the sixteenth and seventeenth centuries, and by the Tuscan architects and decorators especially.

Of the origin of sgraffito I believe it is difficult to speak with anything like accuracy. The Italian artists employed stucco considerably in the decoration of the Vatican, both for modelling and for painting upon. Hence, from this latter use of plaster were revived the various methods, more or less similar, which went by the names of "painting in fresco," "intonaco," "terrata," &c., which, as the earliest examples of wall-decoration indicate—the wall paintings of Pompeii, for instance—were known to artists practising thousands of years ago. It is not unlikely that sgraffito is an offspring of cameo-cutting. They both are arts having limits analogous one to the other. The artist who designed and executed a cameo limited himself in materials and colours. He depended solely upon the variations of layer which a stone possessed. In the same way the sgraffito worker, relieved certainly of the trouble of finding a suitable combination of layers, since each combination is under his control, limits himself to the variations he can obtain from the two layers of oppositely coloured plasters. But Vasari and Bossi, who both describe the working of sgraffito, throw no light upon its antecedents.

In the South Kensington Museum there are specimens of stucco ornamental panels which date from 200 B.C. These panels came from Pozzuoli, near Naples, a village known in centuries past for its abundant examples of stucco work. Some of these panels are unmistakable bits of sgraffito, the marks of the hatcher being quite apparent.

And here I may interpose that sgraffito, as an art applied to other materials, is well known in India. Metal sgraffito is, I believe, of ancient origin. I have not, however, pursued my inquiries as to the archæology of this particular work. It is interesting to note that from Moradabad we have specimens of a leaden ornamentation upon a ground of copper, which are executed precisely after the manner of sgraffito in stucco. Then, again, from Kachmir come silver-gilt works, in which the gilding is scratched away to reveal the background of pure silver, while the gilt ornament remains on its surface. In like manner, a ground of lac applied to pottery is scratched into ornamental forms, of which the pottery *in puris naturalis* is the ground. At South Kensington Museum there is a case entirely occupied by specimens of sgraffito pottery, Italian in origin and of the fifteenth century. From this ware the Italian artist of the fifteenth and sixteenth centuries possibly obtained the suggestion for the revival of sgraffito as a means of decorating façades of houses.

In the course of my researches, which I regret are so slight and hardly worthy of your attention, I have been reminded of the plaster-work to be found in Northern Germany. The examples I particularly allude to are those at Hildesheim and Halberstadt, and date from the eleventh century. These works are not sgraffito; they are low-relief stucco figures. I mention their existence here as an evidence of the lasting powers of the material when fairly protected, and also as a species of connecting-link between the stucco of Pozzuoli and the revived use of it by the Italians in the fifteenth and sixteenth centuries.

During this period great quantities of decoration were executed in plaster. Perino del Vaga, Domenico Beccafumi, and Giovanni da Udine produced works of this kind. But none of these appear to have executed sgraffito decorations. The artist who turned his attention, and, from the works I have consulted, seems to me to have really instigated a revival of sgraffito, is Morto da Feltri. The especial bent of his art was the invention of arabesques and "grotesche." He was a recluse, and apparently embued with strong conservative principles. He devoted himself to discovering examples of the style of art he affected, and his devotion caused him to spend a good deal of his time in the subterraneous passages at Rome, in which he gratified his fancy by the study of the arabesques and such like, which were painted on the walls.

In closely following the footsteps of the Italian masters, Mr. Moody has allowed himself to be tempted into painting the arabesques upon the plaster, instead of hatching them. The result of this is in effect as good at first sight as the real work. But in a short time the accumulation of blacks, soot soaked into the flat surface by rain, reveals the disadvantages arising from such a method of decoration, which cannot, I think, compete with the real work. I humbly submit that sgraffito should be sgraffito, and an imitation of it not be encouraged. I may add that the painted work at South Kensington will shortly give place to the real art.

SPECIAL DWELLINGS COMMITTEE.

THIS committee appointed by the Charity Organization Society held its third meeting on Wednesday, the 12th inst., at the Central Office, the Right. Hon. W. F. Cowper-Temple, M.P., in the chair.

The sub-committee brought up a report, containing a summary of the suggestions which they have had before them:—

"1. Chart indicating the dwellings more or less unfit for habitation in the central parts of London, and showing, as far as practicable, the tenure of the houses and land.

2. Information: (*a*) As to the nature of the dwellings now occupied by the poorer classes in the several districts of London, number of families occupying single rooms, rents, &c. (*b*) As to associations and individuals known to be engaged in improving the dwellings of the poor in London. (*c*) As to the operations of private builders.

QUESTIONS OF PRINCIPLE.

3. The extent (if any) to which principles other than commercial should intervene in the provision of improved dwellings for the poorer classes.

4. The influence of unremunerative rents on the movement for improving dwellings.

5. Bearing of City and other Charities on Metropolitan dwellings for the poorer classes."

And various questions of detail.

The committee then proceeded to consider Clause 3.

Mr. A. H. Hill was of opinion that it was impossible to benefit the people at large by charitable interposition; that indeed any such interposition, if not absolutely necessary, tended only to demoralise. He proposed a resolution, but withdrew it in favour of the following resolution suggested by the Rev. R. J. Simpson, "That in providing improved dwellings for the poorer classes in the metropolis, while by no means discouraging the combination of a judicious philanthropy with business enterprise, this committee considers that a reasonable profit on the outlay must be obtained in all such efforts in order to insure extensive improvement and permanent success."

The Chairman thought that charity and the commercial principle should be made to co-operate, by investors contenting themselves with a regular but moderate dividend.

Mr. Liddle urged the importance of keeping in view the gigantic scale of what was required. He considered that at least two millions of capital would be wanted. But no scheme could succeed unless compulsory powers of purchase were obtained from Government.

Dr. Ross said the question was too complicated and vast to be settled offhand: they could only work away. In his own district of St. Giles's, about one-third of the deaths took place under the care of the Poor-law Medical Officer. How did these people live? In dwellings unfit for any human being. Charity could not deal with so vast a work. There were at present 2,000 tramps and people of bad repute in St. Giles's, with whom nothing could be done until their dwellings were reformed.

Mr. Gilbert said that there were some properties which it would be no charity but a mere act of justice to sell upon easy terms for this purpose. He referred to the property of the corporation, the Ecclesiastical Commissioners, and the Metropolitan Board of Works. Few people had any idea of the injustice done to the poor of late years by wholesale ejectments.

Mr. Gatliff thought it was desirable that companies like the Industrial Dwellings Company, which could do so, should declare a large dividend of 6, 7, or 8 per cent., both to stir up ordinary builders and to encourage others.

Mr. Bosanquet thought it was desirable to come to a resolution, to clear the way for future discussions on details. It seemed to him that there were three ways of improving London,—the enterprise of ordinary builders, the enterprise of building companies, and Improvement Commissioners with compulsory powers. It was an important question how far encouragement given to the two last would check the action of the first.

Dr. Greenhill referred to the statement that two millions of capital would be required. He had made a rough calculation many years ago, and had come to the conclusion that some twelve millions would be required to improve the dwellings of the poor throughout London. He would not despair of getting this on a good scheme likely to pay from 4½ to 5½ per cent.

Adjourned to Wednesday, 26th inst.

VIENNA EXHIBITION.

RAPID progress is being made with the works, and the marvels of the building are becoming more and more apparent. The chief difficulty that looms in the way of visitors is the possible want of sufficient apartments. To lessen this, and prevent imposition, the Austrian Minister has decided that official register bureaux are to be established in each district, appointed by the municipal authorities, to keep a list of disposable lodgings, and refer arriving strangers to such as are vacant.

Bookbinding.—Here, there, and everywhere handsome things have been prepared for the Exhibition. We have inspected with much gratification a number of fine specimens of bookbinding which are about to be sent off by Mr. Joseph Zaehnsdorf, of Catherine-street, Strand. These include a copy of the Doré Bible, in two volumes, bound at a cost of more than 300*l*. The patterns are produced by inlays of different coloured leather, in one case separated throughout by a gold line, in the other not so: the change on the colours produced by the gold line (well understood by those who have studied the subject) is very interesting: it is difficult to believe that the colours are the same. The design of the exterior is a little over florid: we prefer that of the inside, as being more severe. In both, however, the forms are beautifully kept, and the execution is excellent. Mr. Pfander has assisted as designer. Some of the smaller books show beautiful specimens of tool-

ing, and the whole makes a most creditable exhibit on the part of Mr. Zaehnsdorf. The demand for high-class bookbinding is much less than it used to be: cheapness is the object chiefly aimed at now; and the result, unfortunately, is that the number of workmen capable of executing first-rate work in this line is small.

Tiles and Slabs.—Mr. R. Minton Taylor, of Fenton, will show a fine collection of plain, encaustic, and majolica tiles, majolica slabs, and other similar objects. At each end of the wall-space will be shown a complete piece of wall-tiling, including dado, wall-space, and cornice. Both compositions are Classic: that on the left hand is characterised by simplicity of design, while that on the right, composed mainly of majolica tiles in relief, is rich and ornate. Between the two are shown the principal members of a tile reredos, with large pictorial representations of the "Agnus Dei" and "The Pelican in her piety." Several sections are to be shown of an exceedingly rich and elaborate floor which Mr. Taylor is laying at Biddulph Grange for Mr. Robert Heath, and there is also a specimen of a reproduction of a tiled floor of the thirteenth century. The exhibits have been produced under the art-superintendence of Mr. G. Eyre.

DESIGNS FOR THE HÔTEL DE VILLE, PARIS.

FROM the 66 designs submitted, the jury selected 20, the estimates of which ranged from 7,088,761 francs to 19,500,000 francs. The authors of these will all be rewarded. The author of the design standing first will have the direction of the works in carrying it out; the authors of the 2nd, 3rd, 4th, 5th, and 6th will receive respectively 600*l.*, 480*l.*, 400*l.*, 320*l.*, 200*l.* The remaining 14 will receive 100*l.* each, all the premiated designs becoming the property of the Administration.

Ultimately the design of Messrs. Ballu & Deperthes, architects, was selected for execution. The estimated cost of this is put at 13,884,839 francs.

THE NEW TRINITY COLLEGE CHURCH, EDINBURGH.

THIS church is the first edifice erected in one of the new streets opened up by the City Improvement Trust, to be called Jeffrey-street. It is the substitute for an ancient church founded by Mary of Guelders, the consort of James II. of Scotland, in 1462, which was removed several years ago by the operations of the North British Railway Company. This building was, next to Holyrood Chapel, the best example of Mediæval architecture in the city, and consisted of choir, transepts, and aisles. Before taking it down, correct drawings were made, and the stones numbered and carefully removed to a vacant space of ground, with the view of their being reconstructed in the original form.

A lawsuit ensued between the ecclesiastical and municipal authorities as to the disposal of the compensation received from the railway company, which caused many years' delay, and the idea of re-erecting the original church in its entirety was ultimately abandoned, the funds set apart for a new church being insufficient for that purpose. It was resolved, however, to preserve a portion of the original work, and this has been done by making out of the old stones a hall at the rear of a modern church, designed by Mr. Lessels.

The principal elevation is to the north, and consists of a gable, having a tower and spire to the west rising to a height of 115 ft., and to the east a turret roofed in with stone. In the side elevations all attempt at architecture seems to have been abandoned. They consist of a double row of shallow lancet windows, without mouldings or detail. You are supposed not to look round the corner, and yet it is only by so doing that you can see the restored portion, which is decidedly the best worth looking at; and, so far as it goes, the restoration has been carried out in a conservative manner, no attempt having been made to blend old and new masonry. The contrast between the massive boldness of the fifteenth-century work and the flimsy, shallow, characterless work of the nineteenth century is very observable. Why the fine old work should have been thus pushed out of sight, we cannot say. Had it been placed in front, and made as a nave to the preaching-hall, the effect would have been more satisfactory. In the front elevation an attempt has been made to follow out the style of the original, but the attempt has not been a successful one. The best feature is the spire, which has a certain sturdy character about it such as is found in several ancient Scottish examples.

The interior is fitted up with galleries on three sides, supported on iron columns, which are carried up to support a lath-and-plaster arched ceiling, as to which the less said the better. The pulpit occupies the centre of the south side, and on either side of it appears an arch of the ancient aisles, through which a view of the restored part, with its groined ceiling and traceried windows, is obtained. Here again the contrast between the new and the restored old part is very remarkable. One cannot help feeling that if left to the hand of time, the fifteenth-century work would stand hale and sure when that of the nineteenth has crumbled into dust.

THE PAINTERS' COMPANY AND TECHNICAL EDUCATION.

THE Painters' Company was one of the first of the City guilds to move in the direction of technical education, as earlier volumes of the *Builder* would serve to prove. Our advertising columns last week contained fresh offers of premiums from the company for the best specimens of decorative painting, freehand drawing, and so on, not very large, but sufficient to show the company is aware of its duties, and is trying to perform them. We invite such of our readers as these offers concern to obtain the conditions from Painters' Hall, and to compete for the premiums offered. We shall hope to find some really good works sent in.

The company is also arranging for the delivery of lectures, likely to be of advantage in the education of the trade. Mr. John Gregory Crace, now Renter Warden of the company, and who has always shown himself ready to communicate his knowledge and the results of his large experience, will commence the series, on the 15th of May, with a lecture "On Colour, addressed to Operative Painters." Any one who desires to learn can go: there is nothing to pay. Let our young men wake up and look about them. But they must remember it is of no use *merely* looking about: they must go to work resolutely and continuously. The efforts of others in their behalf will be of no avail unless they make efforts for themselves.

THE HOUSES ON THE WALWORTH COMMON ESTATE AND THE BUILDERS.

THE Newington governors and guardians, who have the management of the Walworth Common Estate, are making serious complaints against certain builders of houses on the estate, for violating the terms of their agreements as to the materials used in the buildings, and the conduct of the builders has been the subject of severe animadversion at the last two or three meetings of the Board. The builders are charged, amongst other things, with building on surface-soil foundations, contrary to the agreements into which they have entered. At the meeting of the Board last week, Mr. Malthouse, one of the members, stated that the manner in which some of the houses were run up was simply shameful. Instead of concrete being used as a foundation, they were built on soft clay, and in the case of some of those which he had examined, he was able to pass his stick through it to the extent of between 2 ft. and 3 ft. It having been stated that an explanation on the matter was due from Mr. Jarvis, the surveyor to the estate, Mr. Jarvis said that, as their surveyor, he had purposely attended the meeting to confer with the Board on the subject. He then made a statement which reflected much discredit on the builders. He observed that he was in a great difficulty in the matter. He had done all he possibly could to prevent the use of inferior materials in the construction of the buildings. He had written no less than 800 letters, the whole of which contained complaints as to using bad materials. What Mr. Malthouse had stated was perfectly true. But as matters stood at present he was almost powerless. He had time after time threatened to withhold the certificates of the builders, and in one or two instances he had actually done so. When he had seen bad mortar on the ground he had ordered it to be removed, and yet two hours after he had found that it had been brought back again. There was also a difference of opinion between himself and the estate committee. What he had condemned as bad material they had considered to be fair.

After some discussion, it was resolved to take practical action against the offending builders, and a resolution was passed to the effect that when the surveyor considered there was sufficient reason for withholding the certificate he should do so.

Another resolution was also passed affecting persons who have taken plots of land, but who have not built upon them. This resolution was to the effect that instruction be given to the clerks to serve notices upon those takers of land who as yet had failed to commence building, requiring them immediately to commence operations, upon pain of incurring the forfeiture of the money deposited by them at the time of letting, and their interest in the plots of land taken by them.

PROCEEDINGS UNDER THE NEW SANITARY ACT.

Rotherham.—The joint committee, consisting of representatives from the urban sanitary authority and rural sanitary authority of the union, and the Rawmarsh Local Board have met for the purpose of appointing a medical officer of health for the whole union (excepting Wath), at a salary of 600*l.* a year. The voting was conducted on the ballot principle. There were six names before the committee (Mr. A. W. Babbington, London; Dr. Cobham, Wath; Dr. S. Drew, Chapeltown; Mr. J. N. Fox, London; Mr. W. H. Pearce, Rotherham; and Dr. Edmond Syson, Salford), and out of these Dr. Syson was selected.

Malton.—A joint meeting of the Boards of Guardians and of Health has been held to elect a medical officer at 300*l.* a year for three years. There were five candidates, but the voting was between two local applicants, and resulted as follows:—Dr. Young, 14 votes; Dr. Jones, 13. For the office of nuisance inspector there were eight applicants, salary 150*l.* a year. The voting again was between two local men, Mr. C. Marshall, 16; Mr. J. Marshall, 12. The officers are to enter on their duties (which are not necessarily to claim their whole time), on the 29th of March.

Howden.—A meeting of the guardians of the Howden Union has been held for the election of an inspector of nuisances. There were upwards of twenty applicants for the office, but only three candidates were proposed:—Mr. Alfred Hind, of Rowland Hall, Howden; Mr. Thomas Shaw, of Newport; and Mr. Millan, of Bradford. Mr. Alfred Hind was elected. The salary is to be 156*l.* per annum; the inspector will be expected to devote the whole of his time to the duties of the office, and the appointment was made for one year only. A communication was read from the Goole guardians suggesting the desirableness of a Medical Officer of Health being appointed for a district to consist of the Howden, Goole, Thorne, and Selby unions; but the opinion of the guardians seemed to be decidedly against any such amalgamation. A deputation was appointed to attend a meeting to be held at Beverley, to consider the best means of appointing medical officers for the various unions in the East Riding.

Southport.—For some time past the question of electing a Medical Officer of Health for the borough of Southport has been provocative of much discussion and considerable excitement. The town was divided into two parties, one going for a medical officer of health, part of whose salary (300*l.* a year) should be paid by Government, and the other insisting that the remuneration should not exceed 100*l.* a year, that sum to be paid by the council, ignoring Government assistance altogether. The question culminated at the last monthly meeting of the borough council. The town clerk read the recommendation of the committee that the salary of the medical officer should be 100*l.* a year. An animated discussion ensued, in which the later decision of the general purposes committee was severely criticised. It was eventually resolved that a medical officer should be appointed at 100*l.* a year salary. Had the 300*l.* been voted, a town's meeting would have been held, protesting against the action of the council.

Institution of Surveyors.—The next meeting will be held on Monday evening, March 24th, when a paper will be read by Mr. W. Brown, entitled "Beech Woods and Larch Plantations.'

ARCHITECTURAL SKETCHING.*

HAVING arranged your materials for, say a day's sketching (a sketch-book, Winsor & Newton's B pencil, pair of calipers, a foot-rule, and a plummet will be sufficient), start on your journey with a determination to learn as much as you possibly can. You should carefully observe every building you pass, endeavour to pick out its defects if it have any, and endeavour to avoid them in your own designs.

If, in walking along a country road, it is lined on the sides with various kinds of trees, secure a specimen of each leaf, with its name, and sketch it in your note-book at your leisure,—with flowers do the same,—and, in fact, lose no opportunity of adding to your stock of knowledge. Nothing will ever come amiss to you as an architect. If you pass a farmstead, ask permission to look over it. If the byre or stable seem suitable and convenient, measure them. Look into the piggeries. If a carriage or cart be lying about, get width, length, and height of ceiling necessary in a shed when the shafts are up; the width and height of a cart of hay; the size of the mill in the barn, and other matters which will suggest themselves on the spot,—all these bits of information enter in a note-book kept for the purpose. Wherever you are keep this in practice, and in a year or two, by constant attention to it, you will find that you have amassed an amount of information which will be almost invaluable to you in your daily professional duties. Sir Walter Scott is said to have been able to increase his store of knowledge from the humblest and most ignorant. Keep this in mind; and even if you pass a hedge-trimmer, you may learn from him what kind of a hedge he is trimming, the best age and the best way to plant it, and how long it takes to grow a certain height. This information will enable you to write a concise specification of it in your note-book for future guidance if you should ever use one as a boundary for a property.

An ancient philosopher was asked how he had gathered such immense stores of knowledge as he possessed, and his answer architectural students should constantly keep before them. "I was not ashamed," he said, "to ask questions wherever I was ignorant." But through all this miscellaneous observation you must never forget the principal object of your journey, namely, to sketch Mediæval architecture. When you have arrived at your destination,—let us suppose it to be a parish church,—look carefully at every part of it, both inside and outside. Endeavour, according to your ability, if it contain both early and late work, to fix the various dates in your own mind, which you can compare with some reliable authority at your leisure (not sextons, who are sure to talk about this church having been built in the ninth or tenth century, although it may have been the fifteenth really, but some architectural authority if possible). Having done this, proceed at once to measure and sketch all the early work you can find. Suppose you commence at a doorway: remember all details first, general dimensions next, and ornament last. Take a section of the jamb, with all the measurements and joints, where they occur, carefully marked; get, in fact, the construction of it, then of the arch-mould and dripstone, the caps and bases of pillars, an elevation with all general dimensions, the jointing of arch, of the base of the building, and of the wall in which the door occurs; then sketch the caps and ornament to a large scale, and endeavour to make a regular study of the ornament. Through all this do not hurry. It is not rapidity in sketching and measuring you ought to wish at first to possess, but accuracy, thorough command of and acquaintance with early features, the mouldings, the ornaments, and all detail generally connected with early work.

After you have measured as much detail as time will permit, proceed to write concise notes of the church, which, by-the-by, is almost as important an accomplishment to architects as anything else, and conclude your study of it with a general sketch, with your notes, dates, and modern features, if any, marked on. Never omit to do this, as it is as particular a part of the day's proceedings as any details you may measure.

If you have a will, your progress will be rapid and sure. It is not to be expected that at first you will be able to hit the exact character of the mouldings, that your measurements will be neatly taken, or your perspective sketch precisely accurate, but if you persevere and constantly practise, you will soon train your eye to precision, and rapidly become an expert in sketching and measuring old work.

If you go on a regular sketching tour, never fail to add to your stock of materials the following:—A camp-stool; a drawing-board, about 12 in. by 9 in., would suit very well; a suitable T square; a bottle of ink; and an etching pen. Then set your measurements up on the spot; in fact, always do this where time permits: it insures accuracy, and prevents the odious system of "cooking" your sketches afterwards.

Take your perspective sketches with ink, and, above all, do not hurry. When you draw a line, endeavour to draw it correctly at once; for it is not by dashing in a line and pasting it over with line after line, until you hit upon the correct slope or curve by accident, that you will attain anything like good or satisfactory sketches.

What to sketch is almost as important as how to sketch. If you have a tendency towards church architecture, sketch little if anything but church architecture; if to domestic architecture, sketch little if anything but domestic architecture; because so much energy is lost in endeavouring to master a number of different styles, that it generally results in learning none.

We cannot attain eminence in every style, and the only way to make ourselves eminent at all is by concentrating our whole energies on one particular style, and, I hold, one particular branch of that style. If Mr. Street had studied a variety of styles, or even the miscellaneous application of one style, I do not think he would have occupied at the present day the high position he holds as a designer of ecclesiastical work. We do not hear of men attaining eminence in a variety of accomplishments, but generally one in particular upon which they have bestowed all their attention, and lavished all their resources.

I would therefore encourage architectural students to centre all their attention on one style and one particular application of it, although in a pecuniary point of view (in some cases) it may be disadvantageous. Bad points exist in early work as well as in late; but bigotry prevents a large class of draughtsmen from acknowledging it. These bad points practice and experience only will enable them to discern and avoid.

The benefits of architectural sketching are numerous and important. It trains the eye to a thorough knowledge of perspective; in fact, it is the only proper method of studying perspective; it educates it almost insensibly to an improved idea of form and proportion, and to that subtlety of beauty in old work so difficult to successfully originate; it gives the hand a facility in representing original ideas on paper, and often of an artistic manner of handling them, often tedious otherwise to learn. By measuring them, it acquaints you with the size and appearance of mouldings of particular dimensions, and both this and the material in which it is executed has an important bearing on its character and manner of introduction into modern work which mere sketches without measurements would be totally insufficient for.

By sketching and measuring old work you preserve for your own future reference, or perhaps for publication, details and characteristics of buildings which will soon be in so dilapidated a condition as the character of the mouldings to be undistinguishable,—buildings which are, in the words of Viollet le Duc, "fast disappearing like the leaves in autumn."

Students will some day become architects. Architects' qualifications are onerous and almost without limit. A recently published letter puts this forward well. It says "that of course it is to be expected that an architect shall be able to design buildings which, in a general way, shall combine beauty with soundness of construction, but such a general description does not agree with the views of the present age, and we find him required so to understand the various uses to which buildings are put that he may be able to arrange a plan which shall completely answer its purpose, whether it be for a church, school, town-hall, or warehouse: then he must be a complete master of the various styles of architecture; able to design in any of them, and adapt his building to every peculiarity of any particular style; he must also so understand the various methods of construction that he can give minute directions for executing the several works, whether in brick, stone, wood, iron, glass, or any other material, to their smallest details; he must have the law of contracts at his fingers' ends; understand all about valuations, dilapidations; be able to take out quantities; have a thorough knowledge of the prices of materials and labour in all parts of the kingdom, and to say at a glance how much a building will cost,—to be, in fact, a complete surveyor and lawyer; to say nothing of understanding statics, dynamics, resolution of forces, and all the usual requirements of a civil engineer. As if this were not enough to try one man's brain, we are now continually told that an architect should design the furniture; be able to give models for the carving, designs for stained glass, paperhangings, decorations, carpets, curtains, &c., in addition to the more mechanical portions, as kitchen-fittings, heating apparatus, water and gas supplies, bellhanging, &c. But even this is not sufficient! He is encouraged to spend a good portion of his time in study of high art, figure-drawing, water-colour painting, &c. Then he is to have Nature herself so completely under his control that he shall be able to mould her forms, and as a landscape gardener bring out the varied beauties of the country around his building to their greatest advantage."

Now, as will be seen from this long list of duties, it is essential that all young men during their pupilage should prepare diligently for the work of the future. Sketching is an admirable thing, but it must (like everything else) be done in moderation; there are some who cultivate it too strenuously,—every spare moment is spent in endeavouring to forward themselves in this particular branch. This is a proceeding I strongly deprecate, because, as I have shown, there are responsibilities resting upon them requiring thorough knowledge, skill, judgment, and integrity; and if they do not, as assiduously as in sketching, bestow a proportionate amount of their spare time on the study of the other branches of their profession, according to their importance, how is it to be expected that, when called upon, they will be able to discharge the responsibilities incumbent on them satisfactorily?

These, as some think, subsidiary studies, I consider very important; and although progress in them is slower and less evident, still it will be found in the end that the earnest study of them will more materially contribute than sketching to real intellectual enjoyment and social position.

* From a paper read by Mr. Thomas P. Marwick before the Edinburgh Architectural Association.

DESIGNERS FOR MANCHESTER.

THE report of the head master of the Manchester School of Art, Mr. Muckley, has been printed. We give the concluding portion of it:—

"It has been thought by a few that the chief business of this school is to supply designs for calico printing, and that it ought to educate youths for the immediate purpose of this department of manufacture. Last year, in my report, I just touched on this question, as to what I considered our main function here, and I wish now to go a step further in my views on this head than I did at that time, by stating to you that it is my conviction that we have nothing to do with technical teaching of any kind, nor the special preparation of students for any calling whatever. Our duty, pre-eminently, is to educate the public, and to spread art-education in its simplest and best form, independent of its bearing on any particular manufacture, taking whatever material may be placed in our hands—no matter whether it be that of the artizan class, or that of the wealthier classes of this neighbourhood,—and dealing with it from the broadest possible basis as to the distinguishing characteristics of art-knowledge.

You well know the peculiar demands of different markets at the present moment, and how small a proportion of the designs supplied would bear the criticism of the cultivated ornamentist; and from a business point of view we are conscious that this must necessarily be so, but I am sure you will also see how false would be our position if in this school we attempted to meddle with their requirements; indeed, we should sometimes be found administering to the caprice of the lowest taste, and I should not be surprised if the Bushman himself were to make demands at our hands.

Now with respect to designing for textile fabrics generally, I am very anxious that this institution should do its utmost to help it forward, and I will state to you my views as to what course might be taken to this end in the future.

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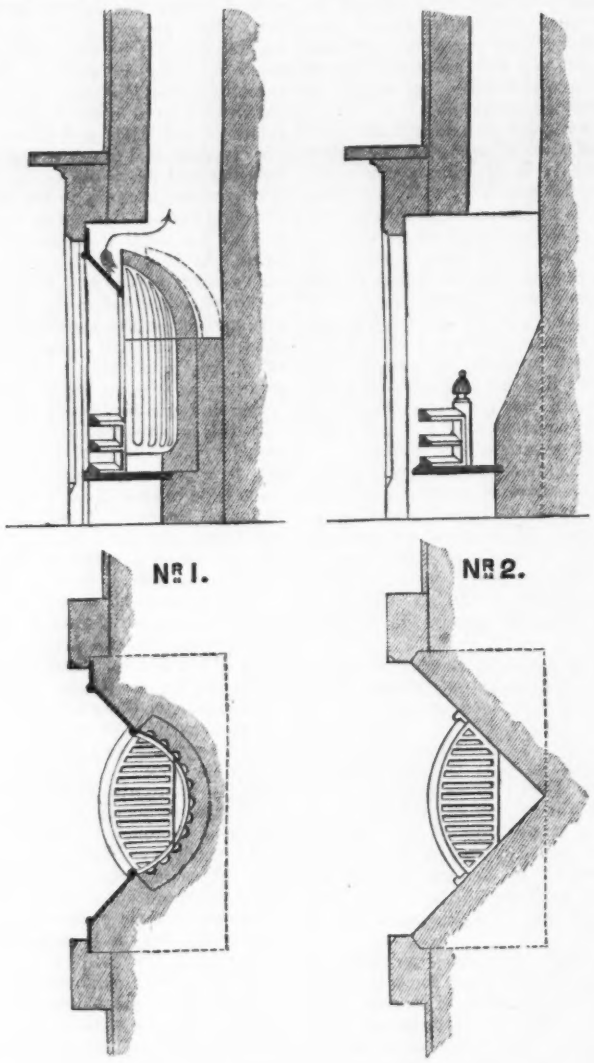


Economical Fireplaces.

Repeatedly have I tried to arouse attention to the matter, being sure the day was near at hand when a demand on our native talent would be made, and I have twice before stated in my former reports, that which I now desire again to bring before you.

I am of opinion, then, that manufacturers should make arrangements with their apprentices, at the commencement of their engagement, to attend the school, in order that they might obtain an art-training up to a certain point, which should be as follows:—To be able to draw fairly, whether from the cast or otherwise, afterwards to draw and paint from natural flowers and foliage. This would form the most important department of their study; and then a close intercourse with ornamental works, through the medium of books and photographs, independent of any particular relation to textile fabric, or other material, with as much drawing of the human figure from the cast as possible.

This training would take about four years to pass through if a student attended the school four nights a week, and after an education of this kind, he would probably be ready to commence his future occupation as a designer, but not before.

When this has been accomplished,—I do not say that some arrangement might not be made for the pupil to receive special instruction suited to the technical requirements of his profession, from some one having superior acquaintance with ornamental design, and with the peculiar requirements of the different markets; but, certainly this school is not the place for that.

One vital point, however, I have not yet put before you; indeed, it is the motive power of the whole affair,—it is the question of emolument.

In Manchester there are ready occupations for youths about fourteen years of age, nearly all of which yield higher wages than those obtained by young designers; consequently, the best students in this school are wishing to avoid designing as a profession, and I therefore strongly feel, that if their services are to be secured, a higher rate of payment should be held out to them, as an inducement to begin their term.

The thoughtful young men of this money-getting city must be made to see clearly that they are likely to do better, or at least as well, at the profession of a designer as they will in all probability do by attaching themselves to any other calling; and, until they have this assurance, they will reasonably seek other employment for their life's work, and the demand for good designers from our own people will be made in vain."

ECONOMICAL FIREPLACES.

THE drawings appended show two forms of fireplace that have been proved to be excellent for the three essentials of heat-giving, non-smoking, and thorough combustion. No. 1 was introduced in Leeds, by whom I do not know, about twenty years ago, and proved an almost certain cure for smoky chimneys. In combination with a half-register grate (*i.e.*, the front portion only of a register grate), the opening of which must be circular in form, is used a back of fire-clay in two pieces,—a half-drum and a half-dome,—the former backed up solid with ordinary brickwork, and the latter resting loose upon the top of it, to allow of the opening for smoke being adjusted and the draught regulated by moving the dome backwards or forwards, and to allow of the chimney being swept, for which purpose the dome is tilted back. The heat thrown out is intense; and until I had made trial of No. 2 I considered it to be the best form of grate for obtaining the full effect of the coal, and for securing freedom from smoke. In the latter respect, there is, probably, no better.

No. 2 form has been long used, I believe, in the Midland district; but my first knowledge of it was derived from Mr. Ewan Christian, who had seen it in York, noticed the good qualities, and adopted it in his practice with great satisfaction. First trying it in my own offices, I have since used it frequently, and always with more satisfaction. The draught is good, without being too quick; the consumption of coal is perfect; and the heat thrown out when the fire is in full glow is like that of a furnace.

To secure the best results, however, there are some points to be attended to:—the angle must be exactly 45°, so that the two sides form a right angle when they meet; the front bars of the grate should *bevel inwards* to the fire,—this is especially necessary with the bottom bar and the top bar; the bottom grid must be below the level of the bottom bar from ¼ in. to ½ in. In *any* grate this is most important, to prevent the fuel falling out whenever it is disturbed, and it is a point regarding which makers of grates are very careless, if not ignorant.

The sides may be built with firebrick, or fire-lumps entirely; but I have used glazed white brick, and glazed tiles, sometimes for the front portion of the jambs, and occasionally for the whole depth, according to the importance of the room.

If a fire be *made up* in a grate of this description,—small coal freely used on the top, and left untouched,—it will burn for four hours, the fire-brick becoming red-hot, and the coal slowly consuming, leaving nothing but small ash. After burning some time, the glow will diminish; and if it be desired to renew it, with the poker clear away the ash from the bottom grid, and the current of air thereby allowed will effect this without disturbing the upper portion of the fire. I have said four hours, but the fire beside me just now was made up five hours ago, and it would last another hour. W. R. CORSON.

THE DURABILITY OF IRON ROOFS.

SIR,—Last Saturday (3 p.m.) I was at Cannon-street Railway Station waiting for a train. There were no trains in motion in the station at the time. I was standing immediately under some part of the ironwork of the roof, when something fell upon my hat, which, on inspection, proved to be a piece of paint and rust half an inch long, and as much broad, and in thickness the paint, I should say, was about two coats, and the other part, which was red rust, might have been as thick as a florin. If rust is forming in such flakes on the supports of *that* roof, so it must be elsewhere; and what will be the ultimate result of such corrosion? The sample of rust that fell into my hands showed that paint had been used; but the growing rust had lifted it up and thrown it off, so that spot is now bare, and oxidation going on; and it is a natural conjecture if we say that the process of decay is actively at work. I do not wish the railway authorities to suppose that I am finding any fault with them, but, nevertheless, they ought to know it, and if the *Builder* will kindly tell them what I say, they may by prompt action conserve their property and save money otherwise.

While I am "on the line," allow me to suggest that some precautions against loss of life be taken at the Spa-road Station, where the platform and its approaches are not commodious enough. The platform is only a few paces wide, and trains come up at each side of it. Some of them pass it at full speed; and it is terrible to stand and look on, and even more so to be in the train itself, and feel like another Juggernaut.

EDGAR REDMOND.

CASES UNDER METROPOLITAN BUILDING ACT.

Wooden Projections.—Mr. Preedy, builder, was summoned by the district surveyor of South Islington, under the 26th section of the Building Act, for having put up an outside flight of wooden steps leading to an upper workshop, at premises Kingsland-green, such steps, with landing (at first of wood, but altered to stone), projecting 3 ft. from the face of the wall of the workshop.

The defendant contended that it was not a projection, that the district surveyor had said he would not object to portable steps, and that these were portable.

The surveyor answered that these could not be carried by one man, if by two; and were such a substantial projection of wood as he had no power to permit.

The magistrate, Mr. Barker, ruled that it was a wooden projection, and ought to be removed. Ordered to be amended within fourteen days, and defendant to pay 23s. costs.

Defendant asked for a case for the Queen's Bench, but took the advice of the magistrate not to press his request, and agreed to amend.

FINANCES OF THE INSTITUTE OF BRITISH ARCHITECTS.

AT the general meeting, already referred to, a financial statement, giving an estimate of the annual receipts and disbursements of the Institute, as approved by the Council, and explaining the investments made and the exceptional expenses incurred within the last four years, having been laid before the meeting, the following proposition of the Council was submitted for approval:—"That in order to meet the excess of disbursements over receipts in 1872-3, occasioned by exceptional expenses during the last four years, the sum of 300*l.* sterling, being accumulated surplus income invested in 1869, be sold out of Consols, and applied as the Council may direct."

After some discussion, during which it was pointed out that the sum of 300*l.*, would probably be insufficient to clear off all liabilities within the present year, the following amendment, having been duly proposed and seconded, was put to the vote and carried:—"That in order to meet the accumulated liabilities at the close of 1872 (shown in the printed statement now before the meeting) the Council be empowered to sell out stock to the amount of 500*l.*"

The amendment was then put as a motion, and carried.

CORPORATE POLITICS *versus* PUBLIC HEALTH.

IT is a fundamental rule in that most excellent and successful system of Poor-law relief, now known as "the Elberfeld system," that all selections and appointments are to be made without reference to politics or religion, or to any consideration save fitness for the office.

The admirable results of the working of this method of proceeding testifies to the correctness of the judgment of Daniel Von der Heydt, the eminent and able founder of the system pursued at Elberfeld. Great would be that gentleman's surprise if he had before him a full report of the proceedings of the Dublin Corporation, on a recent occasion, when that body met, not for the purpose of discussing matters which pertained to itself peculiarly as the sanitary authority of Dublin, but for the consideration of the *Government University Bill*.

We have before us a report of the proceedings in question, and we must not omit to state that there could be no excuse for the proceedings, on the score of inexperience or want of knowledge of the proper functions of a corporation; for the chairman of the Public Health Committee endeavoured to bring the members present to appreciate the objects which should occupy the attention of the civic mind at a time when the people of Dublin were expecting prompt measures for the amelioration of great and pressing evils.

The Dublin Corporation consists of some sixty members, of whom thirty-six were present on the occasion in question; and we read that when an alderman asked for the consideration of the Government scheme of University Education then before Parliament, the chairman of the Health Committee immediately proposed a resolution, to the effect, that it is most objectionable and foreign to the purposes for which the corporation was established to introduce political or religious subjects at any of its meetings, public or private. This was, however, over-ruled, and the discussion of the now celebrated University scheme was proceeded with, and condemned by all present, as well as the other late measures of Church and Land legislation now so well known.

We do not wonder that Mr. Maclean (the chairman of the Public Health Committee) left the council-room without entering into the long political proceedings that ensued, nor are we surprised that the citizens of eminence in Dublin, as a rule, refuse to enter the corporation.

The sad commentary on the above is, that the deaths registered in Dublin during the first ten weeks of the present year exceeded the births by no less than 299, in a population of 314,000.

MIDDLE-CLASS SCHOOLS FOR GIRLS.

MR. E. C. ROBINS, in his paper, read recently before the Architectural Association,* quoted, as follows, from Miss Wolstenholme ("Essay on Education of Girls"):—"The experiment of large schools for girls has been successfully tried, and the results are conclusive as to the superiority of the system (so far as concerns day-schools) whatever point of view we regard it. Their economy is obvious. Morally, we believe the gain to be also great. We want in every considerable town in England a high-school for girls, which should offer the best possible education on moderate terms, one which should serve as a model to all those private establishments for which, in future, as at present, there will no doubt be abundant room. To such a school as this it would be very easy to attach all manner of appliances and apparatus for lectures or special classes, which might be attended by pupils from private families, or smaller schools."

As an illustration of the kind of building that would be required, Mr. Robins showed a design for a new building, prepared expressly for this lecture. The North London Collegiate School, Camden-town, conducted by Miss Buss, the present principal for the last twenty years, has been recently handed over to trustees. Dr. Storrar and the Rev. Prebendary Thorold, two of these trustees, were members of the Secondary Schools Inquiry Commission. In these schools and the Camden Schools (included in the same trust), 700 girls receive the best education, for from 1*l.* 1*s.* to 4*l.* 4*s.* per quarter. Seventy pupils are waiting for admission. Considerable enlargement, or a reconstruction of the present buildings, is contemplated, to provide, in the North London Collegiate Schools, a day-school for 400 pupils,—the sort of high-school with full appliances to which Miss Wolstenholme refers in the extract given above. The following is Mr. Robins's description of his design, shown in the accompanying ground and basement plans. The two upper floors to be similar in arrangement to the ground-floor, though variously employed. The attic to contain servants' dormitories, &c.

The ground-floor provides entrance-hall and general waiting-room, on one side of which are the head mistress's room, and the office.

A general hall and staircase (chiefly lighted from above through the open well-hole) are in the centre opposite the entrance. From the mid-landings of this staircase, lavatories and conveniences are entered through a cross ventilated corridor.

On the right-hand side are class-rooms (for thirty-five and thirty), with small withdrawing class-rooms to each. The upper part of the wall dividing these rooms to be fitted with casements hung on pivots, so that between school hours, or at any time desired, cross ventilation may be obtained by the opposite windows.

On the left-hand side are similar class-rooms, for thirty pupils each. Between these and the staircase are two rooms,—to be music-rooms on upper floors, and teacher's room and library on this story.

The seats and benches in the class-rooms are all designed for a left light. On the first-floor over the hexagon entrance-hall, is another class-room, for twenty-five. Above this, on the two-pair floor, would be two more class-rooms, one for music classes and one for drawing. The total accommodation would thus be

$$\{35 + 30 + (30 \times 2)\} \times 3 + 25 = 400.$$

Over the head-mistress's room and office,—a masters' retiring-room, school apparatus store, and class-rooms would be placed.

A lecture-hall, for 600 on the ground-floor and 200 in an end gallery, is provided. An enclosed gymnasium would be underneath this in the basement, level with the Botanical Garden behind.

The girls could enter the hall from the school building through the class-rooms for lectures, prize-givings, and representations, &c.

In the basement: underneath the paved court, in front of the lecture-hall, are the kitchen, scullery, larder, &c. The space under the class-rooms, &c., on the left side of the central staircase, forms a general dining-room for about 160 girls. A housekeeper's room is provided. From the entrance in front the girls pass through the cloak-rooms, on their way to the class-rooms above. These bonnet and cloak rooms occupy the rest of the basement. Each class would have its own cloak-room, locked up by its mistress. Warm-water pipes for drying the clothes to be carried round under each side of the partitions. The building throughout to be heated by warm-water pipes.

* Mr. Robins gave some particulars as to the provision for girls' education in Russia (ahead of most countries in this matter), in Sweden, Germany, Switzerland, &c. A practical and economical arrangement in Danish schools, observed in a recent visit made by Miss Buss, was given from her private notes. In a school building for 1,000 children, 1,000 are taught from eight (morning) to one; a second 1,000 from one to six. Both schools work to one time-table, under one superintendent, who teaches three hours a day, and has assistants, who teach six hours a day each; the rest of the time is occupied by the visiting teachers of the district. By permanent teachers and the visiting teachers, four schools could be taught (in two buildings) by three sets of teachers. The pupils in these schools have their daily work, as well as this attendance at school.

DESIGN FOR ST. MARY'S CATHEDRAL, EDINBURGH.

THE accompanying engraving represents an interior view, looking east, of Mr. William Burges's design for St. Mary's Cathedral, Edinburgh, concerning which we have more than once spoken. As in the case of the selected design, already illustrated in our pages, we append the remarks of the referee, Mr. Ewan Christian, on Mr. Burges's work:—

"*Non Ignotæ Civitatis Municeps.*—The whole of the drawings are worked out with remarkable skill and conscientious carefulness.

With regard to compliance with Instructions:—1. The area of the whole church, including the choir and its aisles, is sufficient to provide accommodation for more than 1,500 persons; but the number in the transept westward of the choir, in the nave and aisles, would not exceed 1,300. For small congregations the architect makes no special provision, but says, that 'space might be enclosed by temporary wooden barriers, as in Continental churches.'

2. It is proposed to place a large organ, divided into two parts, in the western gallery over the central entrance; and 'a smaller instrument to lead the choir' on the floor near the stalls. As regards suitability for preaching, there is no special provision beyond what is usual in similar large churches; but as a considerable proportion of the 1,500 persons for whom space is required must of necessity be put in the choir aisles, and elsewhere behind the preacher, it is hardly probable that all would hear satisfactorily.

3. Ample space is provided for clock and bells in the western towers, and the architect, in this case, shows a bold skeleton dial in front of one of the upper stages of the north-west tower.

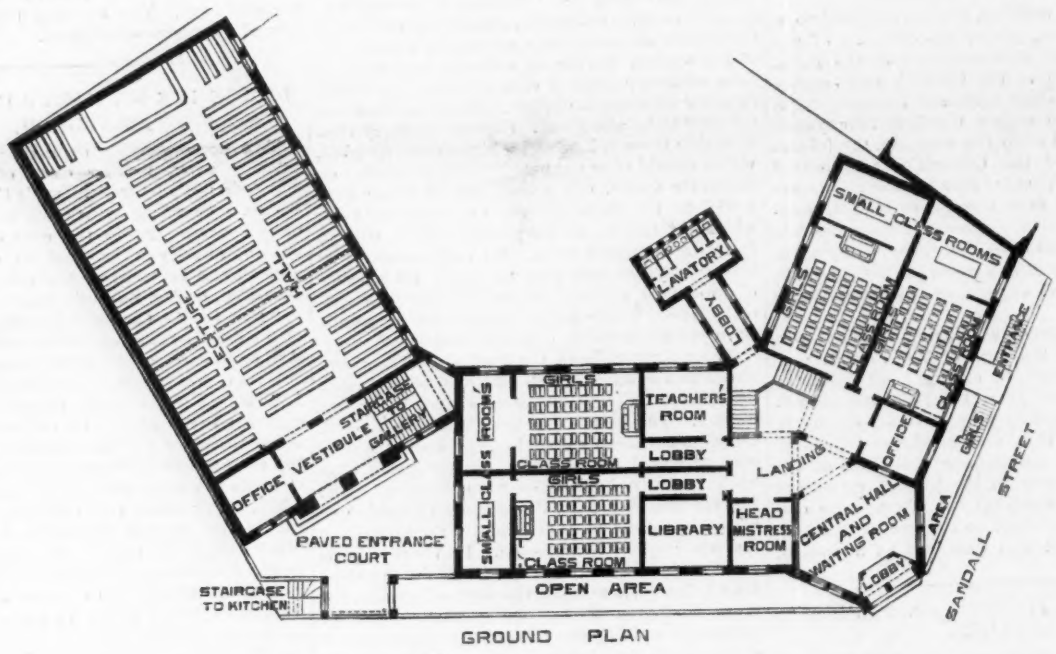
4. The dimensions of the Chapter-house, and of the staircase of approach, are both too limited for the accommodation required; and in every respect this is the least satisfactory feature of the whole design.

5. As regards Coates House, the author says that he 'would strongly recommend the retention of Coates House, not only on account of its interest as a specimen of old Scottish architecture, but as affording the means of grouping the cathedral with the other buildings round and about.' He adds that 'the architects of our ancient cathedrals were most careful to surround their works with other edifices, and no greater mistake can be committed than that so frequently made, of destroying these surrounding buildings.'

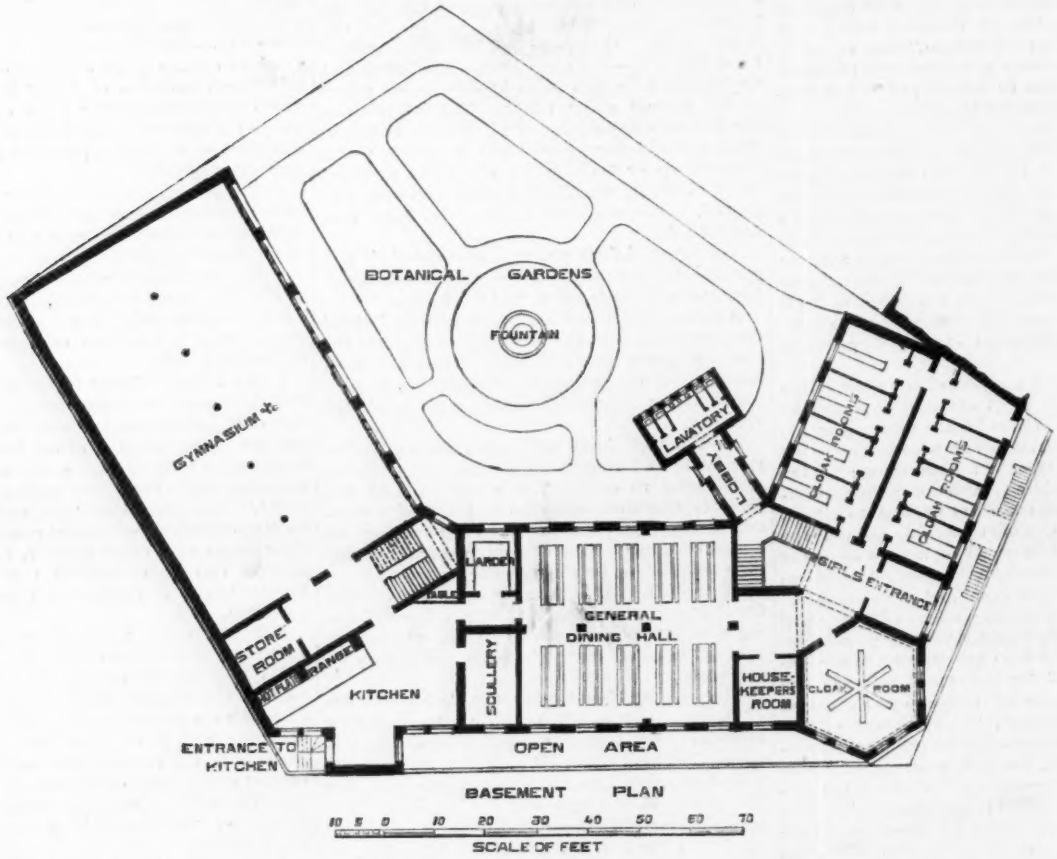
Neither heating nor lighting is particularly described. In respect of cost, the architect says but little; but it may be implied from his general observations that he has proposed to himself to work within the limits given by the trustees; and it must be here remarked, that not only is the cubical area much less, but, by careful comparison of the two, it would appear that the relative cost, as compared with the design of 'Fidelitas,' is also proportionately much lower.

In respect of general Arrangement:—The building is considerably shorter than the length of the site from south-west to north-east, consequently the western front might be advantageously viewed from Palmerston-place. The plan consists of nave, with north and south aisles, the latter terminated by two western towers, the space within and between which forms an unenclosed vestibule to the church; north and south transepts surmounted at the cross by a flèche; choir terminating in an apse; and choir aisles following round; and canons and choir vestries, with chapter-room over, approached by a circular staircase, of somewhat limited dimensions. The entrances are ample in number and area, there being, in addition to the western doorways, one to each of the transepts. None of them are protected, though there is every facility, especially at the western end, for properly effecting this. The font, though near an entrance, is not rightly placed, as it would be hidden by a pier from the congregation.

The construction of the church is solid and good throughout. All the aisles are intended to be vaulted in stone, but the architect has not ventured, on account of cost, to vault either the nave, transepts, or choir, each of which he proposes to surmount by timber roofs, with boarded



GROUND PLAN



BASEMENT PLAN

NORTH LONDON COLLEGIATE SCHOOL: SANDALL ROAD.——*Proposed New Buildings.*

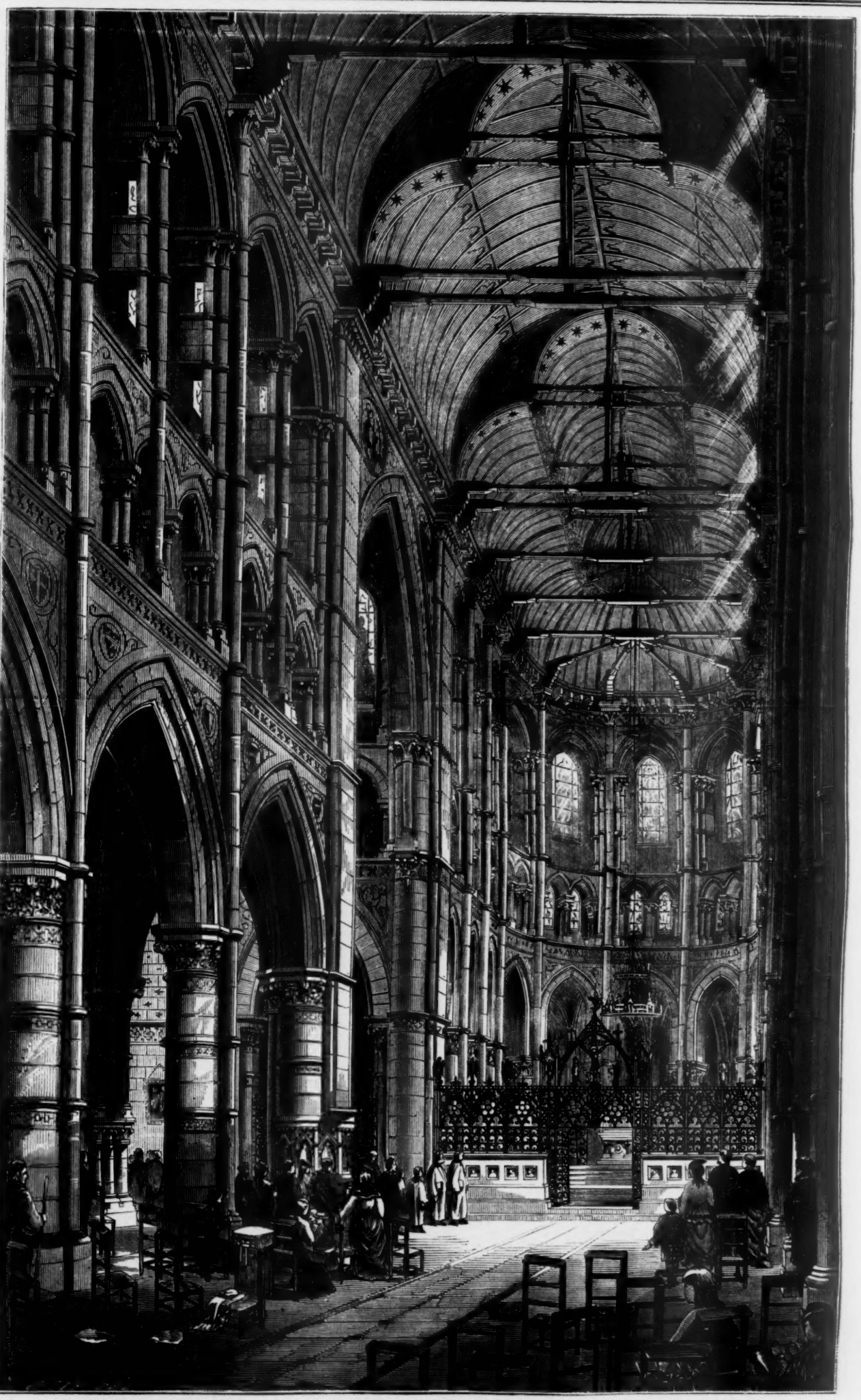
and arched ceilings within, which he states would 'preclude any difficulty as to the preacher's voice being distinctly heard.'

In respect of general Design:—The architect in this case states, that 'the sum of money to be spent utterly precludes any central tower, and the author has consequently elected to put two towers at the west end, where they not only help the western façade, but perform the useful office of masking the western ends of the aisles.'

The spires will be of wood, covered with lead, and the flèche at the intersection of the nave and transepts will also be of the same materials.

He makes no remark as to the style of art in which he has worked; but the design is founded upon a French type, and from materials of which he evidently possesses a masterly knowledge the author has composed a very beautiful design.

In the general scheme and architectural character there is considerable similarity between this design and that of 'Fidelitas'; but in the working out of details they differ more widely. There is less of broad contrast, but equal, if not greater, boldness, in the character of this work. The treatment of the windows is markedly different: while 'Fidelitas' trusts almost entirely to his clearstory windows, the author of this design has much larger windows in the aisles, but his clearstory windows, though smaller in area, are very numerous. The church by either system would be thoroughly lighted. The north-eastern end, next Melville-street, excepting the Chapter-house, which undoubtedly requires to be enlarged and improved, would be rich in effect; and although the flèche would seem to require greater elevation in the base, it would not be an unsatisfactory feature in grouping with the western towers. Considering the limit of cost, the author was probably wise in not attempting a central tower. The interior of the cathedral would be bold and simple, and yet rich in effect, but it would undoubtedly lose both in dignity and solidity by the use of timber roofing, instead of vaulting, for the nave and choir. Taking, however, into account the necessities of the estimate, this design should not suffer by comparison with others on this account. There is, however, one defect which must not be passed over, namely, the method proposed of roofing the aisle of the apse. It is not, as usual, a lean-to, but a span roof, with a gutter inside, next the wall of the main building. The trap for snow that would thus be formed is very objectionable; and as regards external effect also this roof is the least happy part of the whole design, and should, and might easily, be differently treated to avoid this difficulty."



A DESIGN SUBMITTED FOR SAINT MARY'S CATHEDRAL, EDINBURGH: INTERIOR VIEW.
BY MR. W. BURGES, ARCHITECT.

PROVERBS FOR GENERAL CIRCULATION.

THE successful will tell you that "success is the unfailing reward of merit." The world too readily believes the platitude. (What of the noble army of martyrs?)

The guilty are ever on the alert to take up and cast the first stone.

The ambitious without talent are the monkeys fondest of climbing.

We have seen princes bow to lacqueys, and lacqueys turn their backs upon princes.

Sweet things have a wonderful knack of turning sour.

We are very earnest in our prayers for the enlightenment of others.

The scholar who is taught the most will not think the deepest.

We too frequently build up the characters of other men out of the rotten materials of our own imaginations.

If you continue to look at and abuse an eccentric, who insists upon lying in a pig-sty, he will keep there. Take no notice, and he will soon come out.

Never laugh at a hurt man, or ten to one he will hurt you.

When men are alive to their own defects do not show that you are keen-sighted.

Virtue produces beauty, vice deformity.

Virtue prolongs life, vice hastens death.

It is moral cleanliness which is next to godliness, not washed and perfumed skins.

If you spit upon a heated iron, it will hiss.

When fiends gibber round you,—not a word! look straight forward, and march on.

Keep clear of the man who has missed his little game.

Any pre-eminent virtue or talent in a man inevitably has its just equinox.

What duration do you expect for the immortal fame you would win,—one, two, three, or four thousand years? How many fames have survived the latter date?

A man often hits his enemy harder by not striking.

There are talking and writing enough, in all conscience, but they want consistency.

Books should be regarded as storehouses, not as substitutes for thinking.

Vague speculations which can never be authenticated demoralise the mind, and divert it from true science.

Englishmen want to plant a little England everywhere.

Britons are surprised to find that there are heathens unacquainted with Christianity and English law, and immediately punish them for their ignorance.

The nation which has the acumen to adopt the proportionate or symmetrical system of education will inevitably be great. Disproportion is the cause of crime and the fall of nations.

A vicious people will soon be an enslaved people.

WASHING THE STREETS.

WE now give a condensation of the valuable statements made to the City Sewers Commission, on experiments in washing and cleansing the granite and asphalte carriage-ways of many streets with jet and hose. The reports, the last of which is dated 22 Nov. 1872, were made by their engineer and surveyor, Mr. William Haywood:—

"In my report addressed to the committee on the 20th of May, 1867, on the results of some experiments made to determine the value of the system of street-cleansing by jet and hose, and the expense of performing the work, the advantages and disadvantages of the system were entered into by me in considerable detail.

Upon reconsideration, I see no reason to alter the opinions expressed, and it will be necessary therefore here simply to give the experience gained since 1867, and to refer only to the former experiments as far as needful to make comparison between the estimates then framed and those now submitted.

The experiments in 1867 were made solely upon the carriage-way pavements of Cheapside, the Poultry, and Mansion House-street, which were then paved with granite; the total length was 2,000 ft., the superficial area 9,792 yards, the number of hydrants used was 16, with a mean distance of 133 yards between them.

The number of men employed in 1867 was six,—four of whom were employed in playing the jets, and two of them in moving the hose from place to place, and with brooms, keeping the channels clear, and sweeping up the straw and refuse of a larger sort, which would not go down the gratings; they also gave general assistance to the other men.

The experiments were continued for a fortnight, and the average quantity of water daily consumed was 1·99 gallon to each square yard of surface.

The cost for each day's washing averaged—for labour, 9s. 10½d., and for water, 9s. 9d., making a total of 19s. 7½d., or at the rate of 0·024l1d. per square yard, and 2·59l. per mile of street per diem, which is at the rate of 7·51d. per square yard of surface, or 808l. per mile of street per annum.

In 1870 the granite pavement in these streets was replaced by asphalte, and in 1871 the carriage-ways of Old and New Broad-streets were also paved with that material, and at the same time hydrants were fixed in the last-named thoroughfares.

These hydrants were of a simpler character, and cost less than those in Cheapside, the Poultry, and Mansion House-street, and at their rate of cost hydrants could be fixed at about 460l. per mile.

Having recently received your directions to make some additional experiments by washing with jet and hose the surfaces of streets paved with asphalte, I selected for that purpose the carriage-ways of Cheapside, the Poultry, and Mansion House-street, and of Old and New Broad-streets.

The experiment in Cheapside, the Poultry, and Mansion House-street was commenced on Thursday, the 17th of October, and continued until Wednesday, the 23rd of October, or a period of one week.

The length of the line of thoroughfare is 2,000 ft.; its superficial area, as now paved with asphalte, about 10,353 yards.

The time occupied in each washing averaged two hours and four minutes, and the quantity of water daily consumed was 19,726 gallons, or at the rate of 1·90 gallon per square yard of surface.

The quantity used on the first morning in the experiments was largely in excess of the average.

The total daily cost averaged—for labour 9s., for water 9s. 10½d., making a total of 18s. 10½d., or 0·0218d. per square yard, or 2·48l. per mile of street, which is at the rate of 6·823d. per square yard, or 779l. per mile of street per annum.

If to these amounts, however, 20 per cent. be added, as was done in the previous estimates, for the cost of supervision, sweeping up large refuse, and the wear and tear of the apparatus, it makes the total cost per square yard, 8·20d., or per mile of street 934·68l. per annum.

In Old and New Broad-street the total length is 1,436 ft., the superficial area 3,671 yards, the number of hydrants fixed is 9, being at a mean distance of 140 ft. apart.

The average time employed at each washing was one hour and three minutes, the quantity of water consumed was 9,786 gallons, which gives 2·66 gallons to each square yard of surface. The quantity (as in Cheapside, Poultry, &c.) was found to vary but little, whatever the condition of surface, but it was larger on the first morning's washing than upon the average of the week.

The total daily cost of each washing averaged 4s. 9d. for water, 4s. 10½d. for labour, making a total of 9s. 7½d., or 0·0315d. per square yard, or 1·77l. per mile of street. This is at the rate of 9·859d. per square yard of surface, or 554·94l. per mile of street per annum, and adding to this the cost of supervision and other charges, the total cost would be about 11·831d. per square yard, or 666l. per mile of street per annum.

As both thoroughfares were left as nearly as possible in the same state of cleanliness, the difference in cost per square yard is not easy to account for.

The work was usually done between 2 a.m. and 4.30 a.m.; ten men were employed in the work; four men were employed in playing the jets, two in moving the hose from place to place, and four with brooms in sweeping the surface of the asphalte and keeping the channels free from straw and larger refuse; they also used 'squeegees' to dry the surface of the asphalte, it being thought desirable that it should be left as dry as possible, and the number of men was for this reason increased over those employed upon the granite pavements.

The following table shows the results obtained in washing Cheapside and the Poultry in 1867, when paved with granite, and more recently, when paved with asphalte.

Washing Cheapside, the Poultry, and Mansion House-street.

	Granite in 1867.	Asphalte in 1872.
Time occupied in washing	2h. 19m.	2h. 4m.
Consumption of water in gallons per square yard per day	1·99	1·90
Total cost, including supervision, wear and tear of hose, &c., per square yard per annum	Pence 9·01	Pence 8·20
Total cost per mile of main street per annum..	£969	£934

The cost of washing asphalte, therefore, seems to be but about 3 or 4 per cent. less than that of granite, but a higher state of cleanliness is obtained than upon granite.

The main lines of City streets are about seven miles in length, and they comprise about one-half of the entire carriage-way of the City, and the experience now gained in washing Cheapside and the Poultry, and Old and New Broad-streets, indicates that the first cost of fixing hydrants, and the subsequent cost of washing daily the thoroughfares of the City, would be as follows:—

	Total Cost.	
	Per Mile.	For seven miles of main thoroughfares.
	£	£
Cost of fixing hydrants	650	4,550
Cost of washing granite pavement per annum	969	6,783
Cost of washing asphalte pavement per annum	934	6,538

The cost must, however, necessarily vary in almost every street, and it will be safer to take the cost per mile of fitting up streets with hydrants at 700l., and the cost of washing annually at 1,000l. per mile per annum."

THE CURE OF ECHO.

SIR,—I think I have seen it stated in your paper that wires stretched from side to side will cure an echo. Will one of your correspondents say what sized wire and kind; how many, and what distance apart; what distance from end wall and ceiling? Room, 24 ft. wide, 20 ft. high, and 24 ft. long.

B. LINDFIELD.

EMIGRATION FIELDS COMPARED.

SIR,—Your short review of the progress of the colony of New South Wales cannot but prove welcome to the emigrating section of the community. It is very painful to see such splendid emigration fields neglected in favour of the United States, and solely because the colonies do not trumpet their charms as the States do.

The statistics you give speak volumes in favour of New South Wales, as I will attempt to show. I have before me the agricultural statistics of the United States for 1872, and I find the average yield per acre there was:—

Wheat, 11½ bushels, at 5s. 5d.	£3	2	3½
Maize, 25 ,, ,, 2s. 9d.	3	8	9

In New South Wales the same year it stands thus:—

Wheat, 12 bushels at 6s.	£3	12	0
Maize, 30 ,, ,, 3s.	4	10	0

The mean value of an acre in each is therefore:—

The United States	£3	5	6
New South Wales	4	1	0
Balance in favour of the latter		15	6

The cost of a passage to each is:—Nebraska, 10l.; New South Wales, 14l. The extra value of a ten-acre crop will cover the extra cost of passage in one year.

But let us look at the attractions of Queensland, to which colony a passage costs but 4l., the Government paying the balance of 12l.

This colony, if we exclude York Peninsula, extends 6 degrees each side of the Tropic of Capricorn, and there is more difference in its climate from east to west than there is from north to south, and it is nowhere disagreeable but upon the low coast-lands. Wheat is not much cultivated, but the yield averages 30 bushels per acre, and maize 45 bushels. Sugar is extensively cultivated, and by white labour. The yield in the south was 1¼ ton per acre, and in the north 1¼ ton, but in the middle district, *i.e.*, on the Tropic of Capricorn, it was 1 ton only. Taking the whole colony, there were last year (1872) obtained 3,762 tons from about 3,000 acres, being at the rate of 1¼ ton per acre. The labour to produce a ton of sugar will cost about 10l., and as the sugar is worth at least 27l., this is the most profitable investment there can possibly be. Of course it requires united labour, as one man by himself cannot produce it, but ten can produce 150 tons per annum with the aid of 500l. worth of machinery and four horses.

Now, sir, if we compare the income of ten men in Queensland with ten in the United States, we have the following results:—

Queensland.

120 acres of land producing 150 tons of sugar, at 27l. £4,050

United States.

120 acres of land producing 1,380 bushels of wheat, at 5s. 5d. £351

In other words:—

120 acres of land in Queensland will yield	£4,050
1,290 acres of land in the United States will yield	£4,050

Thus we see that to obtain the same results in each of the rival emigration fields, 120 acres must be cleared in Queensland, and 1,290 acres in Nebraska. The summer of the latter is much hotter than that of the former, but the winter is not warm enough for the cultivation of the sugar-cane, and that fact makes the former superior.

It is worthy of attention to note also the difference in the death-rate. This is in Queensland, 15·2 per 1,000 per annum; United States, 30 per 1,000 per annum.

As regards the rate of wages there is no difference, but the cost of living is 25 per cent. less in Queensland than in any of the Western States.

F. J. S.

TUMBLE-DOWN BUILDINGS, MANCHESTER.

SIR,—The township of Hulme has proved itself to be not one whit behind that of Lower Broughton in the character of its buildings; on the contrary, by the recent fall of houses in Embden-street, Hulme has *killed* its man, whereas Lower Broughton only lamed a few. If that man had been a bishop (*vide* railways) instead of being only a bricklayer, the whole city would have been set by the ears, and denunciations loud and deep of the "jerry" work which caused his death would have been

heard on all sides. But, as it is, the local papers simply notice his death, and give a short report of the inquest, with the verdict of "Accidental death," and pass on to consider other matters.

Now, a bricklayer's life (aged 37) may not be worth much (I forget what they used to fetch apiece by auction when I was in the Southern United States); but, much or little, it is worth something to the community, apart from its value to his family, and it does appear to me that proper precautions ought to be taken to preserve it, which, as far as I can gather, were not done in this instance. Like yourself, sir, I decline to call this event an accident. In this case a certain number of houses such as working people are here condemned to live in, for want of better, were contracted for, labour only, by a certain bricklayer, the bricks and mortar being supplied by the customer, whose *wife*, according to her own statement, gave a general supervision to the building, in the course of which it appears that she observed a very ominous bulge in the 4½ in. party-wall, which was built of old bricks entirely, and to a height of some 28 ft.; that she then called out to the men above to come down and shore it up, which they then did, one of them remarking that he thought nothing of the bulge, for the foreman had seen it before, and he was of opinion that the wall would stand *for ever*. They afterwards returned to their work on the top, and very shortly afterwards the wall gave way, and down came the whole bag of tricks, men and all, one of whom has since died in the infirmary, of the injuries he then received. Nothing at all is reported about the other victims, who must get over their injuries as best they can.

Of course, as is always the case, the coroner and jury were assured by those interested, that everything previous to the fall was quite as it should be: good bricks, good mortar, and good workmanship; and, that nothing might be wanting, they were told by the city surveyor, Mr. Lynde, that he observed nothing wrong with the brickwork, although the bricks, being old, were not so absorbent as new ones would be, and that, as far as he could see, *the mortar appeared to be well tempered with lime*. The latter observation is so unique and ambiguous, that I should like to ask Mr. Lynde if he is correctly reported; and if so, what does he mean? Mortar is usually composed of three things, in variable quantities: sand, lime, and water; in the absence of any one of which mortar cannot be made. Speculative builders are not in the habit of "tempering" their mortar with too much lime, because, as they say, sand and water can be got on the spot, and lime has to be fetched from a great distance, which makes it valuable; and, to make matters worse, they run their lime in pits here, in the same way as plasterers do, which takes out its virtue, as the phrase has it, and causes it to be slow setting; so that when used with old bricks, which have no "suction," the wall will be wet for a long time. But bricklayers would be very much offended if they were charged with not knowing this; and yet, as we see in the present instance, they work on to their death. They know, as every one else knows, that a 4½-in. party-wall between two houses, 28 ft. high, built of old bricks in ordinary mortar, is very unsafe at the best times. We had a very little rain or frost here for several weeks previously to this catastrophe, and although the witnesses told the jury that they attributed it to the frost, yet, as other brickwork near, which has been carried up during the same period, is uninjured, the public will have grave doubts about its accuracy. The real cause of the "accident" was the thinness of the walls. As at Lower Broughton, so now at Hulme, I ask, when are builders to be compelled to build houses which shall at once be safe to their makers, and warm and comfortable to their occupants? E. G.

BERKELEY CHAPEL, JOHN STREET, MAYFAIR, W.

SINCE its erection, this church has not undergone much alteration in the arrangement of the interior until recently, when, upon the appointment of the Rev. T. Teignmouth Shore to the incumbency, some improvements have been made, including the removal of the cumbrous high-backed pews, which have been replaced by more fitting accommodation.

The old reading-desk has been banished; the floor of the sanctuary has been raised and enlarged; and the organ and choir have been removed from the east gallery to the north side, the choir-stalls having been arranged *decani* and *cantoris*.

Among the decorative improvements may be mentioned the re-colouring of the chancel in such manner as to show up the pilasters, panels, and mouldings; the pendentives of the ceiling are tinted in two shades of grey, with brown and red mouldings; and the panels are painted in encaustic, warm grey and reddish brown, with slightly floriated diapers. In the centre panel over the table is the figure of our Lord ascending to Heaven; the side subjects are respectively SS. Peter and John. The capitals and bases of the pilasters are brown and gold, the shafts in Etruscan red, with broad bands of ivory colour at the top and bottom, ornamented with bronze-green, maroon, and gold.

It is the intention of the incumbent to take down the east-end gallery, and to place a rose-window in the wall behind it, to alter the side windows for the purpose of obtaining a better light, and to complete the decoration of the ceiling and pillars; and, in fact, the whole of the interior of the church, as soon as the necessary funds, about 500*l*., have been raised.

The altar cloth was supplied by Messrs. Jones & Willis. The works described were executed under the direction of Mr. Pitman, of the firm of Pitman & Cuthbertson.

NEC SINE LABORE.

If ev'ry cave with gold were fill'd,
And ev'ry shell contain'd a pearl,
Who would then strong treasuries build,
Or wear the gem now decks the earl?

The costly gold so finely wrought,
From stubborn rock must first be torn;
The pearl deep down in ocean sought,
By divers bold, before 'tis worn.

By toil men win whate'er they prize,
What lightly comes may lightly go;
Before they reap they early rise,
They weary plough, and broad-cast sow.

By studious day and restless night,
By ceaseless thought, work never done,
They pluck the treasures Truth and Right,
The brightest jewels 'neath the sun.

They gain the guerdon due to fame,
The crowns and laurels heroes wear,
That rarely earn'd immortal name,
Because so few the labour dare.

Oft studious day and restless night,
But win some grain of truth at last;
'Gainst so much toil the gold seems light,
When in the balance countercast.

But who can tell what wealth may rise
From that pure grain in days to come,
When other men of enterprise
Shall strike the lode and trace it home?

Work on, work on, and ne'er repine,
Though treasure found may not be great;
To earnest workers gods incline,
Who mete by will, and not by weight.

W. CAVE THOMAS.

ROOF COVERINGS FOR FARM BUILDINGS.

IN the construction of some kinds of farm buildings, a cheap form of roof-covering is a desideratum; this more especially in the case of temporary buildings, as sheds and the like. Zinc plates, or galvanised iron, plain or corrugated, are often recommended in such cases; but these are rather expensive, and require workmen more or less skilled to fit them up. A writer in the *Field* says, — Where rough boards can be had, a very good, and indeed a lasting, though cheap, roof-covering may be obtained by using them. Slabs will answer if of uniform breadth. This is necessary that their juncture lines when placed on the roof should run in as straight lines as possible, so that the half-round rolls or slats which cover the joints may be laid evenly on. To save labour, if neatness is not important, the covering slats may be made flat on both sides, although the rounding of the upper side adds much to the appearance of the roof. To prevent the covering slats or rolls from being split by the "giving and taking" of the boards of the roof, the joints of which the slats or rolls cover, these must be nailed to the boards on one side only. A roof boarded and rolled may be made to last well for years without slates, tiles, zinc, or asphalted felt, by simply covering its surface with a composition of ordinary coal-tar, in two or three coats.

The cement known as "Portland" is now being used in a variety of ways in construction, and with marked and most economical advantages; perhaps its most recent application is to the formation of cheap and durable roofing in conjunction with coal-tar and strong brown paper, such as is used for laying under carpets. The paper is laid upon the boarding of the roof, the sheets overlapping not less than 3 in., but better if 4 in.; the sheets are then tacked down, and the surface covered with the composition, which is made as follows:—Take 180 lb. of Portland cement (this should weigh, to be good, 100 lb. to 110 lb. to the bushel), and mix it well in a cauldron heated by a furnace. Care must be taken to heat the tar gently at first, so as to prevent it boiling over: and the cement must be mixed gradually in small quantities, so as to insure its thorough mixture with the tar. The mixture, when completed, is to be spread over the surface of the paper with a brush, and in as hot a condition as possible. The surface is then to be rolled over with a light roller, to make it as even as possible, and when partially dried is then to be covered with another layer of brown paper, care being taken to make the second layer to "break joint" with the first-laid layer. In some cases a layer of sand is laid all over the surface of the boards before the first layer of paper is laid down.

Of a similar process we have already given some particulars.

THE SANITARY STATE OF ROTHERHAM.

THE report of Dr. Ballard "upon enteric fever in Rotherham, and generally upon the sanitary condition of the borough," has been laid before the local council. This gentleman was sent down by the Local Government Board some time ago to inquire into the sanitary condition of the borough. The report states that he had visited the town on November 21st and following days, and found that the statement as to the prevalence and fatality of enteric fever in the townships of Rotherham and Kimberworth, including Masborough, and outlying places—all of which were within the jurisdiction of the corporation of Rotherham—was correct. The report dwells upon the utter and complete sanitary neglect throughout the town. He condemns the system of ashpit privies. The corporation, he thought, neither systematically cleansed them itself nor did it systematically require the occupiers of premises to cleanse them.

"The corporation [continues the report], has neglected its duty as the authorised guardians of the pubic health within the borough. The disgusting condition of the poorer neighbourhoods, of the courts and of the privies and ash-pits, and the unwholesome condition of most of the cottages, could not have been made the subject of the unfavourable comments I have been compelled to make, had the local authority exercised, even in the matter of the most obvious and flagrant nuisances, the powers which it has possessed ever since the year 1855. Since 1866 it has also been its positive duty not only to see that nuisances, the subject of complaint, are removed or abated, but, under the 20th section of the Sanitary Act, to make systematic inspections, with a view to discover nuisances dangerous to health and to obtain their removal. This duty has not been performed: it has not even been attempted to be performed. Again, since 1868 it has been its especial duty to see that drains, privies, and ashpits within its jurisdiction do not become nuisances, and it has neglected its duties in this matter to such an extent that they have become the media of spreading enteric fever throughout the district under its control."

The report concludes by suggestions as to the measures which the corporation may at once take for the arrest of the spread of the fever, and as to the future general administration of the borough.

A letter was forwarded with this report from the Local Government Board, requesting that as soon as it had been considered by the council, they would inform the Board as to what steps they proposed to take in the matter.

Waste Pipes and Sewer Gas.—The same thing has to be said again and again. The medical officer of health for St. George's, Hanover-square (Dr. Corfield), has called the attention of the committee of works to the fact that, in a house where he found a case of typhoid fever, the waste-pipe of the drinking water cistern went into the drain. He had traced several cases of typhoid fever and one or two deaths to this cause. He asked if he should give notice in such a case to make the waste-pipe drain elsewhere, and, in case of non-compliance, summon the offender. Dr. Corfield was directed to serve a notice in the case.

THE TRADES MOVEMENT.

Sheffield.—The wood-turners of Sheffield have struck for an advance of 12½ per cent. They will receive 3s. or 4s. a week more than the regular strike allowance, their union being very strong.

Huddersfield.—The master painters have refused to give an advance of wages to the men, but have offered to reduce the length of the day's work by allowing the men to commence work in the morning half an hour later than hitherto. This the men have decided not to accept.

Birmingham.—The carpenters, joiners, and bricklayers have agreed to settle their demand for an advance of wages and alterations in the time rules by arbitration.

Exeter.—The carpenters and joiners have given their employers notice that unless the nine-hours movement is conceded to them, and their wages increased, they will strike next month. The masters have declined to submit to the demands of the men. Negotiations have been in progress twelve months.

Wolverhampton.—At a meeting of the Wolverhampton Brickmakers' Association, it was unanimously resolved to demand an advance of 1s. per 1,000 on the present rate, which is 5s. The masters agreed twelve months ago to give sixpence, as a start, for one year, and the makers assented. It is the determination of the men to strike unless the demand be conceded.——A meeting of masters and men representing the Iron Trade Conciliation Board has met at Wolverhampton, and the masters have resolved that it is impracticable now to adopt a permanent scale for regulating wages, and that the condition of the trade does not warrant any advance upon existing rates. The delegates intimated that these terms would not be accepted by the men.

Edinburgh.—At a meeting of the joiners of Edinburgh held in St. Mary's Hall, it has been agreed to accept of the offer of the employers, viz., 7d. per hour, being an advance of one halfpenny per hour.

Essays on the Labour Question.—Mr. Arthur Steains has offered prizes of 50*l.*, and 30*l.* for the best essays on the Labour Question. He proposes the 1st of September next as the latest time for sending in the essays, and to leave it to the Associated Chambers of Commerce to decide as to whether any and which of the essays come up to the required standard. He does not confine the composition of the essays to any class of writers, and the chief objects he seeks to obtain from them are:—

"1. The elucidation of the anomaly among the working classes of not permitting the intelligent, steady family man, having an ambition to better his position by working hard, to advance beyond the level of the unsteady, indolent, and simple-minded men, the main object in the life of most of whom appears to be to consume their earnings in strong drink and other debasing habits. 2. The true principle upon which capital and labour can be harmonised. 3. The best means for elevating the skilled labour of the country into a better social position than it has hitherto attained. 4. A sound principle upon which Trades Unions or Guilds can be carried on with real advantage to the working classes. 5. The application of scientific aid in manufacturing establishments in order to maintain for this country the pre-eminent position it has hitherto held in this department."

Mr. Roebuck on Strikes and Demagogues.—Mr. J. A. Roebuck was present at a banquet given at the Cutlers' Hall, Sheffield, and in proposing a toast, said,—

"In the English workmen there are great virtues, but there are great weaknesses. I have never flattered the working man. I have never told him he is the man that the world ought to look up to—that he is the one who presents to mankind an instance of great magnificence and virtue; but I will say this of him, that he has got forbearance, that he has got forethought, but at the same time he has got simplicity. His simplicity, feeling his own virtues, makes him believe in the virtue of others. The demagogue who comes to him is but a man of his own class, and perhaps he is not a very good workman, but he has the gift of the gab, and he talks to him, persuades him, and tells him a vast number of wondrous things that he is about to do for him, and so he works upon his simplicity, and his simplicity leads him into great mischief. Now, the working man does not make the wealth that he talks about more than the man of capital. Combined with the man of capital, he, the man of labour, makes England what it is. He is not the sole man; he depends upon capital and capital depends upon him; and between them both England may be great; but separate them, and England will fall. Now the demagogue who comes down and preaches to the workman that capital is his enemy, is the working man's enemy. Capital is the friend; capital ought to be made his friend; and the man of capital who knows what he has to do will conciliate the working man, and will make him his friend. I have before my mind's eye what is now going on in South Wales, and I know what are the terrible results. That strike is not for the purpose of the working man; that strike is for the purpose of the demagogues who impose upon his simplicity."

National Association for the Prevention of Strikes.—A meeting of the supporters of this association met recently at Chippenham, for the purpose of hearing an exposition from Mr. James Phillips, the secretary, of the objects of the association. Mr. Phillips said the association had been called into existence at the instance of some of the leading farmers and tradesmen of the county, who felt the necessity of raising a powerful organisation, having for its object the prevention and repression of strikes, and the advancement of arbitration in trade disputes. The association was one entitled to the support of the nation, and to the nation they would appeal. It was unsectarian in character, and represented in its constitution all shades of political opinion other than those who favoured revolutionary, republican, and dangerous changes; and its objects were to counteract the deplorable effects caused by strikes, and the danger with which all classes of the community were threatened as the result of the tactics of the republican agitators, now prowling about the country, setting class against class. The project, as explained by Mr. Phillips, was received with favour, and at the close of his address the following resolution was unanimously carried:—

"That this meeting having heard Mr. Phillips's explanation of the objects and working of the National Association for the prevention and repression of strikes, and the advancement of arbitration in trade disputes, considers it eminently entitled to the support of all classes in the country, and this meeting pledges itself to do the utmost in its power to make the influence of the Association felt throughout the country by establishing tranches in every town of the United Kingdom."

Mr. Phillips said public meetings would be announced to take place in London and the chief centres of commercial interest.

"WIRING THE WORK."

SIR,—The pretended invention of Mr. H. Turner, of which some account appeared in your journal, constitutes an essential feature of my monolithic patent, which has not only been a long time before the public, but has long since developed the astounding powers of fibrous and rolled metal, and other fibrous materials in combination with cementitious substances for all kinds of buildings, fittings, and fixtures in buildings. Instead of the awkward and tentative operations described in the paragraph in question, under my patent an entire structure is not only formed with the aid of any available cements, but actually without the use of the smallest fragments of wood, lead, or other substance capable of injury by fire. Thus the surface of all parts of every wall, ceiling, floor, door, shelf, closet, &c., is enabled to be finished in one operation, and ornamented in any manner desired.

I have only to add, as the advertisement in relation to this subject announces, that any person using wire in the manner described without my licence will be amenable to the law.

PHILIP BRANNON.

SCHOOL BOARDS.

Northampton.—Mr. T. Roger Smith, architect, London, was, at the instance of the chairman, fixed upon to make a selection from the various plans sent to the Board for the erection of schools on the Spring-land and Vernon-terrace sites. Mr. Smith reported that there were in all 54 designs, of which 29 were for the Spring-lane site, and 25 for the Vernon-terrace site. He reduced them until he was able to recommend for the site in Spring-lane the designs named below, as being, in his opinion, the three first in order of merit:—The first, "Experientia," 3,150*l.*; the second, "Spes," 4,000*l.*; the third, "Convenience, Economy, and Stability," 2,940*l.* For the school to be built in Vernon-terrace, he recommended:—The first, "Spes," 3,000*l.*; the second, "Education," 2,585*l.* and 2,995*l.*; the third, "Convenience, Economy, and Stability," 2,350*l.* The report went on to make some observations with respect to the designs selected, and a long conversation ensued respecting the conditions under which the plans were sent in. Mr. Phipps said it was a question for the Board whether it would take the two sites together; but while he should take the opinion of Mr. Smith upon the Spring-lane site, and accept "Experientia," because there was comparatively little difference between that and the lowest; with regard to the other he should pause, and prefer to take "Convenience, Economy, and Stability," because there was a difference of 650*l.* on 3,000*l.* outlay. He moved that the plan with the motto "Experientia" be selected for the site in Spring-lane. Mr. Rush moved that the site bearing the motto "Convenience, Economy, and Stability" be accepted. Mr. Mason proposed that "May success be equal to labour," which did not appear in the list selected, be adopted as the plan for the Spring-lane site. Neither the motion of Mr. Rush nor Mr. Mason was seconded, and Mr. Phipps's proposition was voted for by all the members except the chairman, who preferred to remain neutral. Mr. Adkins proposed that the Board select the one which stood first on the list for the Vernon-terrace site, because the architect had thought it deserved the first place, considering economy with the general requirements. Mr. Rush again proposed "Convenience, Economy, and Stability," but failed in getting a seconder; and the original motion was carried, all voting in its favour except Mr. Rush and the chairman. The authors of the plans chosen are:—"Experientia," Mr. Robert Walker, 10, King's Arms-yard, Moorgate-street, London, now engaged in building Rochdale Schools at under 4*l.* per child; "Spes," Mr. J. G. Bland, architect, Unity-buildings, Temple-street, Birmingham.

ACCIDENTS.

Fire in a Timber-yard at Liverpool.—An alarming fire recently broke out in the timber-yard belonging to Mr. John Westmoreland, joiner and builder, 115, Islington. The fire originated in the saw-dust pit, underneath the steam circular saws. In the upper rooms there were working about twenty men and four boys, who, immediately they saw the fire, made an effort to save their tools, but they only partially succeeded in doing so. Notwithstanding every effort on the part of the firemen, the building in which it originated was completely gutted. The stock and property are insured in the Queen's to the extent of 2,600*l.*, but the damage is estimated at 3,500*l.*

Fall of a Scaffold with Five Men at Southport.—While three workmen, in the employ of Mr. John Luke Highton, bricklayer, were at work on a new house which is being erected in Upper King-street, Southport, one end of the scaffold on which they were standing gave way, precipitating to the ground two of the bricklayers and three labourers, who were on the gangway underneath, and strewing the basement with the *débris* of a wall 16 ft. high. The workmen are all more or less injured by the fall.

THE SEWAGE QUESTION.

Failure of the Great Crossness Sewage Experiments.—It is disagreeable, although not surprising, to learn that at the end of a year's elaborate investigation, the Metropolitan Board of Works have decided that the results of the trial of the "A B C" process on the London sewage are unsatisfactory and unprofitable. According to Mr. Bazalgette, the chief engineer to the Board, the manure obtained costs 6*l.* 6s. 4d. per ton, without reckoning rent, interest on capital, or depreciation of plant; according to Mr. Keates, the consulting chemist, the chemical value of the manure is 20s. per ton; according to the books of the company, only a few shillings have been received for sales. This is a process in which, as we repeatedly showed, we never had any confidence.

The Windsor Drainage Question.—The Local Board, at a full meeting, have discussed the question whether a system of irrigation or that of deodorisation and precipitation should be adopted, and a majority of eighteen against two decided in favour of the latter system. It was then left for the committee to consider the various plans, including those of the Native Guano Company and General Sewage Company, and recommended one for adoption by the Board. The Board afterwards discussed, in private, the defence which should be made to the summons taken out by the Thames Conservators against them.

The Utilisation of Sewage in Leeds.—A deputation of the Streets and Sewerage Committee of the Leeds Town Council, with the chairman of the Sanitary Committee, and Mr. Morant, the newly-appointed borough engineer and surveyor, have visited Bolton to inquire respecting the sewage utilisation works, and a report has been given in to the general committee. It seems that in Leeds the residuum of the process does not prove to be so valuable as was hoped, and the question of mixing night-soil with it is under discussion. This plan has been partially

adopted at Bolton. There the soil is mainly purchased from the mills, but in Leeds it is suggested that it should be purchased from the night-soil department. To this department the soil is valuable, and by its sale to farmers and others the expenses of the collection of soil and ashes are materially reduced. Were the soil taken away, the ashes could not, it is thought, be so readily disposed of as at present, and this, together with the price to be paid for the soil required to mix with the sewage residuum, seems to be a difficulty in the way of the suggestion being fully carried out.

LOWESTOFT: BELLE VUE PARK COMPETITION.

IN reply to their advertisement, the Commissioners received twenty-seven sets of designs for laying out the proposed new park. The Commissioners, having inspected the drawings, unanimously agreed that the design bearing the motto "Merlin" was entitled to the first premium, and the one called "Floreat Lowestoft" to the second. The names of the successful architects are as follow:—"Merlin," Mr. W. Clement Williams, Cavendish-terrace, Halifax; "Floreat Lowestoft," Mr. Geo. W. Usill, Assoc. Inst. C.E., and Mr. J. Wattall Peggs, Assoc. Inst. C.E., Great Queen-street, Westminster.

Owing to the peculiar outline of the site, no little difficulty would have to be overcome to produce satisfactory results.

CHESTER UNION COMPETITION.

SIR,—When beaten in a competition, as a rule I think it best to say nothing; but one does like to be *fairly* beaten, and the injustice in the present case is so glaring that I shall be glad if you will insert the following remarks.

On the whole, I agree with the letter from "Veritas," in last week's *Builder*, but I would also ask,—How is it that the Guardians (who have now called in the aid of an architect, to be appointed by the Local Government Board, to assist them in selecting the best design) felt themselves qualified to decide upon and *reject* seventeen out of the original thirty designs?

Also, how can these gentlemen know that the designs they have selected can be *executed* for the sum named in the conditions, viz., 30,000*l*.? Are they aware that *cost* is the essence of the present competition (the sum fixed being unquestionably *low* for their requirements), and that the question in justice ought to be, *not* only "which is the best design," but "*which is the best design that, it may reasonably be supposed, can be executed for the stipulated sum*"?

On this question the Guardians are as fit to judge as so many children,—even without taking the "local friends" into consideration. (Note.—I should like to learn the *real* cost when finished, for their requirements are enormous!)

I will only add that my drawings were returned without even thanks for the trouble and expense, though, as sent in, they were worth little under 100*l*.!

The thirty architects engaged would have done well had they each put in 5*l*., and then had a raffle for the prize; really, they would have spared themselves much hard work and annoyance, and the lucky man would have had the commission without having even carried out the work.

Well, architects have only themselves to thank for a state of things that can render such a competition as this possible.

PRO BONO PAUPERUM.

METROPOLITAN CONVALESCENT INSTITUTION COMPETITION.

SIR,—It should be known that three out of the four architects invited by the Board declined to compete under the circumstances for the New Children's Asylum, at Kingston-hill.

ONE OF THE ARCHITECTS.

PAINTERS' THREATENED STRIKE.

SIR,—In Liverpool the painters are again agitating for a further advance in wages as the season for painting comes on. They may or may not in this instance be able to obtain all they want from the employer, but what is the consequence? The master painter has to charge exorbitantly to the public; the latter will submit only to a certain point. The evil works its own cure. At the present time there are acres of painting being done in Liverpool and the neighbourhood, *but not by journeymen painters*. Large owners of warehouses, houses, offices, and other property, are now purchasing the paints themselves, employing old sailors (and many of them are splendid hands with the brush), others get the work done by their warehousemen, or by ordinary labourers, at 3*s*. to 3*s*. 6*d*. per day (a day, too, of eleven to twelve hours), and I will tell you the result in one instance. A friend of mine wanted the outside ironwork of a large block of buildings, scraping and painting, and got an estimate in for doing it, which was 20*l*. He bought his own paint, employed ordinary working men, and the building was as well painted as any practical painter could do it, at a cost of 7*l*.!

Why should skilled labour be employed in scraping and painting the outsides of office blocks, warehouses, ironwork, and such like? It does not require an artist to do this description of painting. When a working painter would come and do a fair day's work for a fair day's pay (before he was the slave of a paid agitator), he was always sent for. The public are always willing to give a fair and reasonable advanced price for work when the working man has to pay more for the necessaries of life, but kick against imposition; and now owners of property are fast following the examples set by one or two, and never send for the *working painter* but when skilled labour is a necessity, such as for graining, platting, &c.

Why should not London follow the example of Liverpool in this respect?

AN ESTATE AGENT.

PARTNERSHIP DANGERS.

Harding v. *Banks*.—This was an equity suit brought to dissolve a partnership and appoint a receiver in the Westminster County Court.

Mr. Harding stated that having noticed an advertisement requiring a partner for a flourishing manufacturing business, he replied to a firm of solicitors, who referred him to Mr. Banks, the defendant, who gave a glowing description of the business, saying the takings were 60*l*. per week, which might be increased, and the profits were 10*l*. a week. The profession was that of lithographers and draughtsmen, and was carried on in Drury-lane. Believing all this, he agreed to become a partner, and a provisional deed of partnership was drawn up between himself and the defendant. He had paid altogether 143*l*. into the concern, and the deed arranged that at the expiration of three months if he did not approve of the business his money should be returned and the partnership dissolved. It was not very long before he found that architects, engineers, and other customers, did not patronise their firm to an extent of profit, and his partner further executed a bill of sale without his consent, signing it in the name of the firm conjointly. He now, although the three months had expired, prayed the Court to grant his application, as it would entitle him to a lien on the goods.

The Judge (Mr. F. Bayley) said, supposing there were a large estate involved the proceedings now taken would be advisable; but from what had been stated he should say it would be policy for the plaintiff to take what he could get without further litigation or expense. He should suggest a compromise.

The counsel and solicitors, with their clients, took the hint, and it was agreed that the defaulting partner should give all the goods and stock-in-trade to the plaintiff; the partnership to be dissolved; each party to pay his own costs, and all litigation to cease.

THE FALL OF A BUILDING AT WALKLEY.

AN action,—Burton *v.* Powell,—has been tried at the Sheffield County Court, to recover 6*l*. 14*s*. 6*d*., damage done to the property of the plaintiff, under the following circumstances:—On the 26th of January, the gable end of a house in course of erection, in Industry-street, Walkley, fell in, and bulged in the gable end of the house situated a few feet distant, and occupied by the plaintiff. A large aperture was made in the wall, and about half a ton of bricks and timber fell into the bedroom and destroyed furniture to the above amount. It was alleged that the newly-erected property had been built without proper supports, and that the mortar used in construction was little better than mud. The plaintiff, who had entertained fears as to the insecurity of the house, had removed his wife and children the day before the occurrence.

For the defendant, it was shown that the defendant was not the contractor for the property, and the plaintiff was non-suited.

THE ARCHITECTS' BENEVOLENT SOCIETY.

THE annual general meeting of the members took place on Wednesday, the 12th inst., at the Rooms of the Royal Institute of British Architects, the president of the Society, Mr. Sidney Smirke, R.A., occupying the chair.

The report showed that favourable progress had been made by the Society during the past twelve months.

"The gross receipts during the past year have amounted to 428*l*. 12*s*., as compared with 388*l*. 8*s*. 4*d*. during the year 1871, and there remains now a balance in hand of 132*l*. 10*s*. 11*d*., as compared with 70*l*. 18*s*. at the same period last year, and again a somewhat larger sum was distributed during the year 1872 than in 1871.

The council regret to state that the deaths of members during the year have nearly equalled the number of new subscribers; but it is earnestly hoped that great efforts will be made by all who are interested in the welfare of the society to enlist a greater number of members."

The report then alluded to the fact that though much work was being carried out by the profession at large, "old age and sickness have still their numerous victims; and, above all, the cries of the widows and children are still unceasingly heard."

The report concluded with a recognition of the gratuitous use of their rooms which the Royal Institute allowed the Society for holding their meetings, and of the prominent notice into which their president, Mr. T. H. Wyatt, had brought the Society.

The meeting then considered the auditors' balance-sheet, which showed the receipts during the past year, from all sources, to have been 428*l*. 12*s*., and the expenditure 296*l*. 1*s*. 1*d*., of which 190*l*. had been in gifts to applicants, and 31*l*. 18*s*. had been invested.

A discussion ensued, headed by Mr. D. Mocatta, upon the plans to be adopted to extend the Society's capacity for usefulness, which was still considerably curtailed through lack of funds; and upon the subject spoke Messrs. Boulnois, Cockerell, Kerr, and Nash.

In addition to those already cited as present, were Messrs. W. Moseley, Geo. J. J. Mair, T. M. Rickman, G. Wales, John Turner, the hon. sec., and J. Goldicutt Turner. Messrs. Horace Jones, C. C. Nelson, J. H. Hakewill, and John S. Phené all wrote regretting the probability of their being unable to attend the meeting.

At the close of the proceedings, the president stated that since the council meeting of the 27th ult., the following donations had been received:—

	£.	s.	d.
J. MacIvar Anderson (further donation) ...	5	5	0
Horace Jones ..... ,, ...	5	5	0
D. Mocatta ..... ,, ...	5	0	0
J. S. Phené ..... ,, ...	5	0	0
John Turner, hon. sec. ,, ...	5	0	0
C. J. Knight	5	5	0
Arthur Blomfield	5	5	0
G. N. Clifton	10	10	0
Wm. Moseley	5	5	0
Robert Edis	1	1	0

And that Mrs. Edward Hakewill continued her late husband's subscription; also that Messrs. John Noyes and C. Dowling had promised to become annual subscribers each of one guinea.

ST. SEPULCHRE'S CHURCH, LONDON.

THE restoration of the fine old tower, west front, and porch of this church has been placed in the hands of Mr. W. P. Griffith, F.S.A., whose drawings, having been approved by the sub-committee and the Estates Committee, were unanimously confirmed by the Vestry at their last meeting, and Mr. Griffith was appointed to carry out the same.

The perspective view exhibits the perfect church, with nave, aisles, and chancel, but these latter are not contemplated at present.

The new octagonal angle-turrets are to be embattled and panelled, and surmounted by octagonal pinnacles with finials and crockets. The parapets are to be embattled and panelled, and the buttresses are to be restored with gablets. The belfry and tower windows are to have mullions, transoms, and foiled tracery, with canopied heads, finials, and crockets. The clock is placed in a canopy, with buttresses supported by winged figures.

The west window will be in three cinque-foiled lights, with transom and tracery, and, with the aisle windows, to have lead lights, quarried. The west doorway and porch are to be restored exactly as formerly. The canopied niche containing the statue of Chancellor Popham is to occupy its original position over the doorway of the porch, and the parvise turret is to be carried up to its proper height and embattled as formerly. All the restorations and details are to be of the fifteenth century, the church having been built in the year 1450.

EDINBURGH ARCHITECTURAL ASSOCIATION.

LAST week a meeting of this Association was held in the Rooms, 37, George-street. In the absence of the president, Mr. Alex. Ballantine was voted to the chair. After ordinary preliminary business, Mr. R. T. Shiells called attention to the very commonplace character of the buildings in progress on the south side of the Castle Rock; and after exhibiting the plans of them, the following resolution was passed:—"That the Edinburgh Architectural Association highly approve of the steps taken by the town council regarding the Government new barrack building on the Castle Rock, as they are of opinion that if executed according to the drawings, the building will be quite out of harmony with the site and surroundings." A paper was then read by Mr. Thos. Henderson, on "Some Causes affecting the Development of Architecture in Scotland," in which the relations between the history of the Scottish people and certain features of the national architecture were traced and illustrated. The points principally referred to were the influence of the mixture of race of which the Scottish nation consists—the isolated situation of the country, and the absence of great wealth among the people. Above all, the intercourse with Ireland in the early ages, and with England and France, at a later period, was shown to have left marked traces on Scottish art; while the influence of the national religion, both embodied in the primitive Church of the Culdees and in that of the Reformation, favoured a simplicity of ritual not conducive to magnificence in the ecclesiastical buildings of the country as a whole, though there were many noble and notable examples. Mr. Thomas P. Marwick afterwards read a paper on "Architectural Sketching," part of which we print elsewhere.

ARCHITECTURAL PUBLICATION SOCIETY.

IN consequence of letters complaining of the stoppage of the "Dictionary," we have made some inquiries as to the position of the work. Mr. Arthur Cates says, "the deaths, one after another, of the chief workers, and the other engagements of Mr. Wyatt Papworth, who holds the management of the text, seemed to seriously affect our progress. I have hoped for some opportunity to arise of which advantage might be taken to go on, and meanwhile, considering that we are trustees for those who paid under the new arrangement, until the way is more clearly to be seen I demur to incurring any more expenditure than is necessary, and have a large sum in the hands of the treasurer, Mr. Sydney Smirke, available directly we can go on. Of this the subscribers may be sure, that the funds are well taken care of in the hands of Mr. Smirke. Perhaps the better course will be to hold a general meeting, to which the facts of the position may be fairly stated. The only causes for not having done so long ago have been the hope and reasonable expectation that I might be able to lay before it a proposal for completing the 'Dictionary' out of hand."

THE CHARING-CROSS APPROACH TO THE THAMES EMBANKMENT.

AT the last meeting of the Metropolitan Board of Works, Mr. Bazalgette, the engineer of the Board, made a report as to the gradients and general features of the proposed approach to the Victoria Embankment from Charing-cross, as compared with the curved line suggested by the late Sir James Pennethorne. The report discussed at considerable length the relative advantages of the Northumberland House scheme and a curved approach. The merits of the two projects, according to the reporter's view, were thus briefly compared:—"1. Northumberland House approach is the most direct and shortest route with the best inclinations. 2. It would be a handsome improvement, whereas one side of the curved line must be very unsightly. 3. The Northumberland House plan would probably cost about one-third of the curvilinear project." The report was adopted.

The chairman announced that the whole of the new loan of 1,800,000*l.* was now fully subscribed, at an average price of 95*l.* 11s. 10d. per cent., so that the stock to be credited amounts to 1,883,033*l.* 14s. 4d.

Mr. Dresser Rogers stated that a large amount had been subscribed in sums of 100*l.* by the public generally, while 400,000*l.* had been taken up by one subscriber alone.

THE RECENT HIGH TIDES AND THE ROTHERHITHE WHARF.

PROCEEDINGS AGAINST THE OWNERS.

THE recent disastrous high tides which flooded several houses in Rotherhithe and the neighbourhood, and did much damage, have led to steps being taken to compel the owners of the wharf wall to reconstruct it, as in consequence of the defective condition of the wall in question, the owners of the wharf are held accountable for the injury to property which the high tides caused.

A memorial has just been presented by the Rotherhithe Vestry, from the residents of Adam-street, complaining of the loss and inconvenience which they have suffered owing to the flooding of their houses to a height of upwards of 3 ft. It appeared from the memorial that in some of these houses the occupants slept on the ground-floor, and that several of them were washed out, and lost their beds and other articles of furniture. Some discussion followed upon the presentation of the memorial, from which it appeared that the responsible parties were the owners of the wharf to which the mischief could be traced; and it was stated by the surveyor that some three months ago he called the attention of the owners to the defective condition of the wharf wall, informing them that the wall was an insufficient protection against the action of high tides, and that in case of any such disaster as had now occurred, they would be held accountable for the damage. It was agreed to forward the memorial to the owners of the wharf, with an intimation that they were bound to compensate the memorialists for the damage they had sustained; and it was also resolved to intimate to the owners that the vestry considered them responsible, owing to their having failed to carry out the recommendations of the surveyor in regard to the wharf wall, and that proceedings would be taken to compel them to rebuild it.

NATIONAL MONUMENTS.

IT is to be hoped that political changes will not interfere with the passing of an Act for the preservation of our ancient national monuments. Sir John Lubbock's Bill, now before the House, contains various schedules of buildings, one of which we give, as conveying an idea of the ancient monuments intended to be protected:—

ENGLAND AND WALES.

	County.	Parish.
The Dolmen Plas Newydd, Anglesea	Anglesea	Llandedwen.
The tumulus known as Wayland Smith's Forge	Berkshire	Ashbury.
Uffington Castle	"	Uffington.
Sarsen Stones at Ashdown	"	Ashbury.
White Horse	"	Uffington.
The circle known as the Three Hurlers	Cornwall	St. Cleer.
The stone circle known as Long Meg and her Daughters, near Penrith	Cumberland	Addingham.
The stone circle on Castle Rigg, near Keswick	"	Crosthwaite.
The stone circles on Burn Moor	"	St. Bees.
The stone circle known as the Nine Ladies, Stanton Moor	Derbyshire	Youlgrave.
The tumulus known as Arborlow	"	"
Hob Hurst's House and Hut, Bastow Moor	"	Bakewell.
Minning Low	"	Brassington.
The circle known as Grey Wethers	Devonshire	Lidford.
The Amphitheatre, Dorchester	Dorsetshire	Fordington.
Maiden Castle	"	Winterbourne St. Martin.
Badbury Ring, near Blandford	"	Shapwick.
Arthur's Quoit, Gower	Glamorganshire	Llanridian.
The tumulus at Uley	Gloucestershire	Uley.
Mule Hill, Isle of Man	Isle of Man	Rushen.
Kit's Coty House	Kent	Aylesford
Danes' Camp	Northamptonshire	Hardingstone.
Castle Dykes	"	Farthingston.
The Rollrich Stones	Oxfordshire	Little Rollright.
The ancient stones at Stanton Drew	Somersetshire	Stanton Drew.
The chambered tumulus at Stoney Littleton, Wellow	"	Wellow.
Cadbury Castle	"	South Cadbury.
Cæsar's Camp	Surrey	Wimbledon.
Mayborough, near Penrith	Westmoreland	Barton.
Arthur's Round Table, Penrith	"	"
Stones at Shap	"	Shap.
The group of stones known as Stonehenge	Wiltshire	Amesbury.
The vallum at Abury, the standing stones within the same, and those along the Kennett-road	"	Abury.
The long barrow at West Kennet, near Marlborough	"	West Kennet.
Silbury Hill	"	Abury.
The dolmen (Devil's Den) near Marlborough	"	Fyfield.
Barbury Castle	"	Ogbourne, St. Andrews, and Swindon.
Old Sarum	"	Stratford Subcastle.

Any monuments of a like kind to the above, not being situated in any park, garden, or pleasure-ground, and which "neither forms part of nor includes the ruins of any castle, fortress, abbey, religious house, or ecclesiastical edifice," will come within the operation of the Bill, and the commissioners to be appointed under it may prohibit its injury or destruction, and take steps to acquire it in whole or in part for the nation.

The Last of a Foreman.—On Saturday last at West Brompton Cemetery, the funeral of the late Mr. A. Rae took place. He was for several years a foreman in the employ of Messrs. Geo. Trollope & Sons, of Belgrave Works, Pimlico. The various foremen of the firm, together with about sixty of the *employés*, attended to pay the last mark of respect due to one who, by his uniform kindness and straightforwardness, was highly esteemed by all who knew him.

NORTHUMBERLAND HOUSE: AN IDEA.

SIR,—The transfer of this well-known Charing-cross standard from the noble owner to the Metropolitan Board of Works, for improvements in connexion with the Thames Embankment, has called forth in the press a variety of comments, reports, and historical matter. It has occurred, Sir, to me that a fine opportunity presents itself for setting up a mutually contributed memorial of considerable interest both to present as well as future metropolitan generations. There can be no two opinions that the "finest site in Europe" (as Trafalgar-square has been called) will have its beauty wonderfully enhanced by the contemplated new avenue from Charing-cross to the embankment, which will certainly form an architectural vista wholly unequalled. But we shall lose our old favourite landmark, the noble façade, with its crowning ornament, the Percy lion, now enclosing Northumberland House from view. Northumberland House naturally calls to mind the noble owners, who are so prominently identified with the great improvement in question. The writer had the honour of knowing the father of the present Duke, when, as Lord Lovaine, he took part in the grand procession at the Coronation of George IV. The present Duke was then a little boy, the Hon. Algernon Percy, before he went to Eton, and was even then a youth of gallant bearing; and in after-life, when he became Lord Lovaine, displayed a large amount of unostentatious benevolence, while the world at large only knew him as a young nobleman in "The Guards," and a member of Parliament. But the Percys have always been a model race, and good exponents of "Noblesse oblige." And in our own day, if we commence with our life-boats, and wade through a whole catalogue of charitable institutions, or look into the class of intercourse existing between the family and their tenants, and other parties of all ranks, a goodly example presents itself for the peerage at large.

Now, Sir, for my "Idea." My suggestion is, that the patriotic act of his Grace in thus disposing of his family mansion should be taken advantage of by all parties, the Duke, the Board of Works, and the people, to record of the same something after the following fashion, viz.:—The new opening, when made, will present a footway crossing from one side to the other of considerable length. Let there be erected, in the centre thereof, as a refuge for foot passengers proceeding from Charing-cross to the Strand, a noble oval pedestal of white marble, some 10 ft. in height, and say 12 ft. by 6 ft. in dimension, the same to be surmounted by a proportionately smaller one, either intact or clustered, of polished red granite, of sufficient height and size to carry a cap stone to receive our old identical standard acquaintance, the Percy Lion, who now towers over the same spot. The pedestal to bear a suitable inscription, recording dates and old particulars, with a ribbon facia in relieved bronze, "That here stood Northumberland House, the London residence of the Percys." The erection might be further utilised by the judicious introduction of small semicircular fountain basins for drinking. The whole might cost comparatively nothing, as, doubtless, we have amongst us public spirited marble-workers who would be proud, either singly or in a body, to supply the material for the very honour of the thing, to say nothing of the act as an advertisement. Let the new avenue, which will, doubtless, consist on either side of noble edifices, be called, say "Percy Gardens," or "Avenue," or "Northumberland Gardens," and, to unite the *utile* with the *dulce*, let the East and West Strand and Charing-cross corners of the same be respectively occupied by handsome worthy erections, especially built if possible, the one for "Coutts's" bank the other for "Drummond's," both of which wealthy establishments are sadly in the shade at present as ornaments of street architecture, and the arrangement would form an appropriate link uniting the ranks of *haut ton*, wealth, and business. "Last and not least," let his Grace himself lend his countenance to the whole, and stipulate for the perpetuity of the same by vesting for ever, in the hands of suitable trustees, one-fifth of the purchase-money named, for the use and benefit (according to his own notions) of the poor and needy of the adjoining parishes. This would leave him in possession of a balance of 400,000*l.*, which would assuredly build for him the handsomest ducal residence in London.

We have already inaugurated a race of Peabodys in our midst, and an English duke would be a proud addition to the family, and would form an example to which the "lion" himself would significantly point his tail for all who come after him to follow; and would, moreover, set up a noble contrast on the southern side of the Strand to that which occasionally mars the serenity and repose of Nelson's modern lions on the north side.

In continuation, as the level of the Embankment is some 15 ft. lower than that of the projected avenue, a carriageway junction might be made on either side the same diverging right and left to the Embankment, of agreeable and convenient grade of inclination protected on the outer side by a handsome dwarf stone wall, terminating with a lamp-pillar at the lower end; and at either upper end a flight of steps for foot-passengers curving round an elegant superstructure in the centre, down to the Embankment,—said central erection affording a fine position for architectural and floral display.

J. W., C.E.

THE ABATTOIR QUESTION IN BRADFORD.

AT the present moment, when the question of public or private slaughter-houses is engaging attention in the metropolis, owing to the probable enforcement of the Act prohibiting private slaughter-houses, it may be interesting to notice how the same question has been solved in the important manufacturing town of Bradford in Yorkshire.

Some time since the Bradford Corporation determined to build a commodious abattoir at Leeds-road, at a great expense, with the sole object of inaugurating a better state of things in regard to the slaughtering of animals. The butchers took umbrage at the site, built a rival slaughter-house at Bolton Bridge, just out of the limits of the borough, and there carried on the butchering business. It was claimed for the corporation that this proceeding of the butchers was an infringement of the manorial rights, for

which the corporation has to pay a large yearly sum. A heavy loss accrued to the corporation from the butchers removing to their own abattoir, and litigation has been going on until last week. Some members of the corporation were determined to test the rights acquired by the lease of the manorial privileges, while others thought that the time had arrived when litigation ought to cease, and the question be settled by the corporation buying up the butchers' abattoir. The butchers wanted 10,000*l.* for their plant and premises, and 2,000*l.* for law expenses. This, however, was thought to be a high price, and the council have just now agreed to purchase the premises of the Abattoir Company for 10,500*l.* The litigation is thus extinguished. It has, however, been a wasteful affair.

HYDE PARK CORNER.

THE Earl of Longford writes to us (as also to the *Times*),—

"The opening of Hamilton-place suggests a further improvement in the same direction, namely, the construction of a short length of road in continuation of Hamilton-place across the corner of the Green Park to Constitution-hill, and a carriage-thoroughfare by that route to Buckingham Gate. This would give a tolerably direct line from the Marble Arch to Westminster Bridge; it would still present some graceful curves, but, with a little shaving at Buckingham Gate, no serious angles, and would relieve, by avoiding, the blockade (to say nothing of the coachmakers' bills) at Hyde Park-corner.

Some years ago many of us viewed with alarm the proposal to open a route across a portion of St. James's Park. Experience has shown the convenience and the innocence of that arrangement. With this experience to guide us, it is believed that the adoption of the suggestion here respectfully put forward would, without inconvenience to the Crown or any one of its subjects, prove to be of equal public advantage."

That great public convenience would be afforded by such an arrangement as that proposed is certain, and though one or two obvious objections come at once to the mind, it well deserves discussion.

A scheme by Mr. E. M. Barry, for improving the means of access at Hyde Park-corner, was illustrated in our pages some few years ago.

"TO ARCHITECTS."

WE have received several copies of a printed paper sent out by "the purchaser of the Clarendon Hotel, Old Bond-street," inviting architects to submit designs, with specifications and estimates, for the erection of a building on the site, to comprise shops on the ground-floor, with suites of rooms or chambers over, after the manner of the Belgrave Mansions, Grosvenor-gardens, and offering a premium of 50*l.* for the most approved design, and one of 10*l.* for the second. Further,—"The designs which obtain premiums are, with the plans, &c., to become the property of the Advertiser, who does not bind himself to employ any competitor to superintend or carry out the work." The least amount of consideration will, we should think, suffice to prevent any respectable member of the profession from responding to such an offer.

STAINED GLASS.

All Saints' Church, Acton.—The fourth of the windows in the east bay of this church has been filled with stained and painted glass, the gift of Mr. W. Hunter, of Purley Lodge, Croydon. It is from the studio of Powell, Brothers, of Leeds.

Handsworth Church.—A stained-glass memorial window, in memory of the late Rev. John Hand and his wife, has recently been fixed in the east end of this church. The whole has been designed and executed by Messrs. James Ballantine & Son, of Edinburgh. The window is divided into three tall lights, in the Early Pointed style of church architecture, and has been filled with thick crystalline stained glass. The centre light illustrates "The Last Supper." The subject underneath is a space containing the text, "As often as ye eat this bread and drink this cup, ye do show the Lord's death till He come." The side lights are illustrative of our Lord in the Garden of Gethsemane. The text, "My soul is exceeding sorrowful, even unto death," is depicted in the one subject; and in the other is, "O my Father, if this cup may not pass away except I drink it, Thy will be done." The diapering throughout the window is formed of the Cross, outlined upon a light ground. The Dove, amid golden rays, emblematic of the descent of the Holy Spirit, is introduced in the top arching of the centre light.

Hall of Peterhouse, Cambridge.—The large bay-window in this hall has recently been filled with stained glass by Messrs. Morris, Marshall, & Co. Mr. F. Madox Brown was the designer of several of the figures of worthies. The window comprises three tiers, of seven lights each. The whole represents a tree, on the branches of which hang shields of arms: these occupy the lowest tier of lights. The second tier comprises seven figures, one in each light, being representations of six worthies, and the founder of the college, in his monk's dress. All these figures are by Mr. Brown. They represent, from our left, Homer, Aristotle, Cicero, the founder, Friar Bacon, Lord Bacon, and Newton. Four other windows, for the same hall, have been undertaken by the firm in question. They comprise three lights each:—1. With figures of Edward I., St. Peter, and Queen Eleanor. The first and third of these are by Mr. Brown. This window is in its place. 2. Figures of Dr. Warkworth, Cardinal Beaufort, and Chancellor Holbroke. These figures, designed by the artist we have named, are finished, but not yet set up. 3. Cavendish, the chemist; Grofton; and Gray, the poet. 4. Crashaw, Bishop Cosins, and Whitgift. The last three are placed, and are by Mr. Brown.

Books Received.

Happy Homes for Working Men, and how to get them. By the Rev. JAMES BEGG, D.D. Second edition, revised. Edinburgh: F. Lyon. London: Cassell, Petter, & Galpin. 1873.

DR. BEGG, who is well known as an able and acute writer on social economy, has published a new edition of the above work, which has already been noticed in our columns. His theory is that, under certain forms of co-operation, every working man may eventually become proprietor of his own house; and we are told that "upwards of 900 houses have thus been built in Edinburgh, at prices varying from 130*l.* to 215*l.*, the feu-duty [or ground-rent] being from 11s. to 20s. They are nearly all sold, and are chiefly the property of working men; whilst the shareholders of the association have received annually from 7½ to 15 per cent. upon their capital." We agree with the doctor (although we have differences on certain points) in holding that this would be an advantageous application of the present high wages of the working classes, particularly when compared with "the miserable and sinful objects to which these are at present so often devoted."

VARIORUM.

The *Lithographer*, monthly journal, No. 33, vol. iii. March 15th, 1873. London: Wyman & Sons, Great Queen-street. This journal contains matter useful both to the trade and to the public. We hope to see it take higher ground as it progresses under its new arrangements.——"Salvage Corps. By Henry J. Barber. Brighouse: Bayes. 1873." The origin and use of fire salvage corps, with reasons for their general establishment, are shown by the author of this pamphlet, who is vice-president and trustee of the West Yorkshire Fire Brigade Friendly Society and chief officer of the Royal Insurance Volunteer Fire Brigade at Brighouse. ——"The Amalgamation of the Mayor's Court, London, and the City of London Court; with Remarks on the proposed Tribunal of Commerce. By G. Manley Wetherfield, Solicitor. London: Longmans & Co. 1873." The amalgamation of the two courts named into one complete City Court for Civil Causes, as here explained, would, the author believes, remove unnecessary complications and remedy all defects in these courts. ——"The London Necropolis, or Woking Cemetery. Chief Office, Lancaster-place, Strand." In this pamphlet an account is given of the picturesque and well-conducted cemetery at Woking, with remarks on extramural sepulture, the requirements of which this cemetery helps well to fulfil, as well as those of funeral reform. ——The *Gazette des Architectes et du Bâtiment* (February 28th) has reproduced from our pages the plans and particulars of Mr. Chas. Barry's design for school in Winchester-street, Finsbury.

Miscellanea.

Messrs. Moreland's Iron Factory.—Messrs. Moreland, well known for many years in this peculiar line, have recently carried out a considerable addition to their establishment in Old-street, St. Luke's. The *Metropolitan* says,—The frontage in the main street is extended 35 ft.; and the new building, 48 ft. high from footing to ridge, is lighted mainly by skylights in the roof, and is designed for an iron store. There is no display on the ground level—a plain brick façade of red brick, with a diaper pattern in blue, with a large entrance-gate travelling on rollers, from which it is suspended, and passing, when open, in front of the hall. On the floor above are two large windows, 18 ft. high and 9 ft. wide, of cast-iron built up in sections. On entering the warehouse is a weigh-bridge, over which vans and carts must pass and register their load in so doing, or otherwise the weight of any quantity of iron cannot be taken accurately at once—15 tons are the maximum load; and it was manufactured by Messrs. Hart, of Leman-street, Whitechapel. The whole store is commanded by an overhead traveller 32 ft. in the clear, powerful enough to move and lift 10 tons. This was fitted up by Messrs. Appleby Brothers, of Emerson-street, Southwark. The site is supposed to be exactly upon one of the localities in which pits were sunk for the interment of the dead *en masse* at the time of the Great Plague of London, and a public-house at the angle of the street still goes by the name of the "Pitt's Head,"—a local name undoubtedly derived in the first instance from the circumstance to which we have alluded, although now, as may be imagined, the signboard that designates the house is a likeness of the celebrated statesman of that name. The works have been carried out by their relatives, Messrs. Joseph Moreland & Sons, of Old-street.

Public Hall for Chesterfield.—As the result of many committee meetings and much deliberation, a joint meeting of the members of the council of the Chesterfield and Derbyshire Institute of Mining, Civil, and Mechanical Engineers; of the committees of the Chesterfield and Brampton Mechanics' Institute, the Working Men's Club, the Technical Classes, and the Chesterfield Young Men's Christian Association; of the subscribers to the fund for plans, estimates, and preliminary expenses for the proposed public hall and buildings; and of other gentlemen interested, has been held in the Municipal Hall, Chesterfield, Mr. C. Binns in the chair. It then it appeared that the only available site in the town was at the top of the new street to the railway station, now in course of formation, where it was proposed to purchase from the mayor a plot of ground containing 1,500 yards, at 12s. 6d. per yard, and to erect thereon a commodious structure, adapted to the increasing necessities of the town and neighbourhood. It was suggested by the committee that there should be in common, for the use of the various societies, a large hall capable of seating 800 persons, a smaller room for 200, and a good library. Something like 10,000*l.* would be needed. The offer of the mayor was accepted by the meeting, and it was resolved to make an appeal to owners of property, the great works in the neighbourhood, and the public generally.

Widening the Metropolitan Thoroughfares.—The Westminster District Board of Works have received from their Works and General Purposes Committee, a report stating that having considered the systematic widening of the streets in the district, and the importance of widening Cannon-row, they have agreed upon the following recommendations, viz.:—"That it is very important steps should be taken for widening Cannon-row at the present time, and that it is advisable a communication should be addressed to the Metropolitan Board of Works, calling upon that Board to make the improvement in connexion with the Thames Embankment works. That as to the more general question of widening all narrow thoroughfares upon a properly-arranged system, from time to time, as opportunities offer, either from land being vacant or from houses and buildings being demolished, the committee are of opinion the subject is of great importance, and deserving of most serious consideration, not alone with reference to the Westminster district, but in regard to the whole of the metropolis." The report is to be considered at a special vestry.

Art and Morality.—There are few questions upon which more dissimilarity of opinion prevails than that which relates to the mission of artists. The *Saturday Review* calls attention to a fallacious doctrine which has recently been put forward, to the effect that the artist is unfettered by political, social, and religious considerations in the exercise of his art. Without entering into a profound discussion of the question in its numerous ramifications, it shows the best manner of ascertaining the true relations between art and morality. As human beings reach their highest development by practising the rules of morality, and the highest art is illustrative of the most fully-wrought faculties, it may be taken for a general rule that a thoroughly healthy state of mind is most conducive to the performance of great works. The best art and the loftiest morality spring from the same source, and may be recognised by purity and truth. With regard to those who are exceptions to the rule it may be safely asserted that their strength lay in the nobler sentiments of their nature, not in the collateral evils which were unfortunately mixed up with them.

Heating Apparatus. — Messrs. Truswell, Brothers, & Holden, of Sheffield, have brought out an apparatus, specially designed for this end, which is adapted to warm the air in public buildings, private houses, warehouses, sale shops, &c. The invention has been patented, and is in use in different churches, chapels, schools, and sale-shops in Sheffield and suburbs, besides various other parts of England. The apparatus consists of a number of cast-iron pipes (round or oval) placed in tiers, layers, or rows one above another, with space sufficient between each to allow of the heat to pass. Those pipes are fitted into socket plates with expansion joints, so that the apparatus may be got up to any heat without injury from expansion or contraction, the arrangement being such as to insure the fire passing under or over the whole of the pipes. The apparatus is encased in brick, and the cold air passes into the pipes by means of flues or apertures in the brickwork, and then goes into the hot-air flue, from which it travels into the building to be heated. The heat is regulated by a peculiar ventilator. The patent has lately been further extended, and the patentee intends to compete for one or more of the prizes offered by the Society of Arts.

The American Iron Trade.—The trouble in the English coal and iron trades has been a golden opportunity for American iron interests. The production of American railroad iron in 1872 reached the unprecedented amount of 975,000 tons, an increase of 200,000 tons in one year. As compared with 1864, the production of 1872 shows an increase of 191 per cent., the amount in the former year having been only 335,000 tons. In 1871 the proportion of English railroad iron to the entire consumption was more than 43 per cent., but is reduced for 1872 to 35 per cent., the supply from Great Britain having actually diminished during the year, while the aggregate consumption has increased by more than 150,000 tons. "A year or two more of the same experience," says the *Boston (U.S.) Advertiser*, "and we shall be independent of the English iron market, and may even begin to compete with it for the foreign trade."

Co-operative Associations.—The accounts rendered to the Registrar of Friendly Societies by 746 industrial and provident (co-operative) societies in England show that in 1871 they received for grocery, drapery, and other goods sold 8,687,562*l.* Their expenses amounted to 382,361*l.*, and they realised disposable net profits to the amount of 720,121*l.* The societies established in Lancashire received in the year more than three millions cash for goods sold; those in Yorkshire more than two millions; those in Middlesex, 688,000*l.* Among these last the chief return is from the Civil Service Supply Association, Monkwell-street, which numbers 3,422 members, has a share capital of less than 2,000*l.*, received in the year 625,305*l.* cash for goods sold, had expenses amounting to 40,758*l.*, and made 18,626*l.* disposable net profit. Above 200 societies neglected to make a return.

The Surveyorship to the Highway Board' Middleton Cheney.—Mr. Samuel Sharp, of Thenford, parish surveyor under the old Act, and a member of the Board for a number of years, has been elected by a majority of 21 to 10 of the Brackley Highway Board, as their surveyor. The salary has been raised to 200*l.* a-year.

The Air-Gas at the Crystal Palace.—The directors of the new Air-Gaslight Company resolved, with permission of the Crystal Palace Company, to light up the western side of the north nave of the Palace with something like 550 burners. The row of burners on the eastern side of the same nave was supplied with ordinary coal gas. During the illumination (about an hour and a half), the air gas is said to have emitted a light that was quite brilliant and steady, at a height of 50 ft., and a distance of several hundred yards, while it was being made at the time of burning in the Tropical Department with very little trouble. The light was quite white, and at times of intense brilliancy, though it did not transpire with what velocity it was sent through the pipes. Its illuminating power, as shown in the nave, was equal to that of the coal gas.

Royal Hibernian Academy of Arts.—The forty-fourth exhibition of paintings, &c., in connexion with this Academy, was opened in their Gallery, Lower Abbey-street. The gallery presents an appearance superior to that of any former occasion, in consequence of the alteration in the lighting from the roof, recently carried out under the superintendence of Mr. J. H. Owen, architect of the Board of Works. The angular formation of the roof, by which light to a great extent was obstructed, has been removed. The roof is now of a semicircular form, and the sky-light has full play on the sides and ends in a manner that leaves little to be desired. Even the pillars have been removed, and there is nothing whatever now to obstruct the view from any part of the gallery, or to throw a shadow upon a picture.

Monumental.—A monument has just been erected in Burton Parish Church to the memory of the late Mr. William Worthington, of Newton Park. It is chiefly worked in Caen stone, except the slab on which the inscription is placed, and that is of Carrara marble, surmounted by three carved niches of the Decorated period, in which are three figures emblematical of justice, mercy, and humility. A memorial window has just been erected on the south side of the chancel of Newton Solney Church, to Mr. Calvert Worthington, second son of the above-named gentleman. The window consists of three main lights, with traceried openings above, and is of the Decorated period. The subject is a choir of angels, chosen because of the great interest the deceased took in forming the choir of the church. Messrs. Hardman & Co., of Birmingham, were the artists.

Alleged Substitute for Coal.—Mr. William Wright, of Sheffield, plumber, has patented an invention which proposes, in short, to use air for fuel. We do not quite understand it; but it is thus described:—"Atmospheric air is passed through a battery charged in such a manner that it carbonises the air which issues at the other end, combustible gas burning with a flame brighter than that of coal-gas, and when mixed with atmospheric air having a heating power capable of melting copper wire. Mr. Wright calculates that the gas may be made on this plan at the cost of 6d. per 1,000 ft., but the consumption will be one-half faster than that of coal-gas, so that the price will be practically 9d. per 1,000 against the present rate."

The Proposed New Railway Station at Middlesbrough.—After the last meeting of the Town Council, Mr. Peachey, architect, Darlington, was in attendance at the Corporation Hall, and exhibited and explained the plans of the proposed new railway station. On the site of their present station the North-Eastern Railway Company intend erecting a station, 300 ft. long, an up-platform and a down-platform, with two sets of offices, at a total cost of about 90,000*l.* Mr. Peachey is preparing to let contracts for the work. This large outlay includes cost of subways underneath the new station to relieve the traffic over the level crossing in Sussex-street, which is a busy thoroughfare.

Hospitals to be built for Burning.—Dr. Woodworth proposes that all buildings intended for the treatment of the sick should in future be constructed of wood instead of stone, brick, or iron, and that after having been in use ten or fifteen years, these wooden structures should be destroyed. He advises this course because hospital buildings become in time impregnated with poisonous exhalations, which, respired by a certain class of patients, conduce to provoke erysipelas and cognate disease.

Water-Supply by Steam Fire Engine at Warwick.—In consequence of repairs being required to the waterworks' engines at Portobello, handbills were issued informing householders that for two days the supply of town water would be stopped. Mr. Pritchard, C.E., borough surveyor, however, determined to attempt to connect the rising main with the fire "steamer," and so supply water as usual. Accordingly, Shand & Mason's small engine was placed *in situ*, and pumping was commenced. The experiment was successful. The low-lying parts of the town were continuously supplied, and it was only in the higher levels that an intermittent flow was necessitated, from the low strength of the "steamer" as compared with the stationary engines.

Contamination of the Manchester Water-Supply with Lead.—A letter from Sir Joseph Heron as to a lecture by Mr. Crace Calvert at the Royal Institution of Manchester having been published in the local *Courier*, Mr. Calvert has written to the same paper showing that the Manchester water, which is very soft and pure, does act upon lead (as such water is apt to do); and he republishes certain statements and recommendations as to the fact contained in a report published in 1861 by a sub-committee of the local sanitary association. This is a matter of serious importance, and ought never to have been lost sight of. The lining of lead pipes with tin, Professor Calvert states, can only afford temporary protection, and is of no practical value. He has himself tried to substitute iron piping.

The Anniversary of Thanksgiving Day. The Prince of Wales has accepted a testimonial in commemoration of Thanksgiving Day. It has been presented by the Ludgate-hill Decoration Committee, and consists of a poem profusely and elaborately illuminated by Miss K. Ashley, and inclosed in a casket carved in rich pollard oak by Mr. G. A. Rogers, of Maddox-street. Sir Wm. Knollys, in a letter to Mr. Herbage, the secretary of the committee, conveyed

"The thanks and admiration which both the Prince and Princess expressed on seeing one of the most beautifully illuminated and bound volumes, and one of the most elaborately carved boxes which art in this or any other country can produce."

The late R. W. Thomson, C.E.—The inventor of the road steamer with india-rubber tires on the driving-wheels has died, at his house in Moray-place, Edinburgh, in the fiftieth year of his age. Mr. Thomson was a man of great ability. Blasting by electricity was one of his earlier occupations, and Sir William Cubitt was so much struck with it that he at once set him over 500 men and engaged him in the gigantic blasting operations then in progress near Dover. From Cubitt's he passed into the employment of the Stephensons, and at twenty-two began business on his own account as a railway engineer. He afterwards patented the india-rubber tire for road locomotives.

The New Royal Hotel at Blackfriars.—The contract for the erection of the new Royal Hotel, at the corner of the Thames Embankment and Blackfriars, which is about to be erected for Mr. De Keyser, and for which Mr. Gruning is the architect, has just been taken by Messrs. Lucas Brothers, the amount of the contract being 49,790*l.* This is independent of the foundations up to the level of the Embankment, and 30 ft. above the ground-level at the rear of the hotel, for which Messrs. George Trollope & Sons are the contractors. Messrs. Trollope's contract has been completed, and the work is now ready to receive the superstructure.

Thames Embankment at Battersea.—The Wandsworth District Board of Works propose constructing an embankment similar to the Albert Embankment on the Thames, in front of St. John's Training College, Battersea. The scheme has received the approval of the Thames Conservators; provided the work is carried out to the satisfaction of their engineer. The Board has no Act of Parliament, and arrangements must be made with Earl Spencer, who owns the property, and who requires the land and premises to be valued by his surveyor.

Plymouth New Guildhall.—There is some talk of completing the new guildhall in Plymouth in time for the visit of the Bath and West of England Agricultural Society to the town in June next. The architects are at present engaged with the plans for the gas-fittings for the southern range of buildings.

A Veteran.—Mr. G. L. Taylor, the surviving author of Taylor & Cresy's "Architectural Antiquities of Rome" (who is now in his eighty-sixth year), has expressed a wish to read a paper at the Institute of Architects, on "Classic Architecture," as principally exemplified in the buildings of Rome. But as papers have been promised for all the ordinary general meeting nights of the present session, the council have arranged that Mr. Taylor's paper shall be read at the rooms of the Institute on Monday, the 7th of April, when the chair will be taken at 8 p.m.

A Hotel-keepers' Association.—A meeting of hotel proprietors and managers has been held in the "City Terminus" Hotel, Cannon-street, E.C., for the purpose of forming an Association of Hotel-keepers for Mutual Protection and Co-operation. Mr. John Hall ("Great Western" Hotel, Birmingham) was in the chair. An association was formed, to be called "The Hotel-keepers' Association" and other appropriate resolutions passed. The offices of the Association are to be for the present at the "Great Western" Hotel, Birmingham.

Sewage Irrigation at Doncaster.—The extensive sewage works which the Corporation of Doncaster have been carrying out during the last two years, and which have involved an outlay of about 25,000*l.*, have just been completed, and the sewage of the town is now being pumped up to a farm at Sandall, three miles off, and utilised in the irrigation of the land. The farm consists of 265 acres, and is the property of the Corporation. It has been let for a term of fourteen years, at 800*l.* per annum.

Addition to Stockton Workhouse.—At a meeting of the Stockton Board of Guardians tenders for a new vagrant ward, estimated to cost 1,000*l.*, were opened, and subject to the approval of the architect. The tenders of Mr. Bland (builder), Mr. Smurke (joiner), and Mrs. Atkinson (plumber), to do the work for 988*l.* 9s. 6d., were accepted.

Lath and Veneer Cutting.—A prospectus has been issued of the Lath and Veneer Cutting Company (Limited), with a capital of 50,000*l.*, in shares of 4*l.*, to purchase Ellis's patents for cutting wood. The payment is to be 14,000*l.* cash, and 10,000*l.* in deferred shares.

Free Library and Museum for Hereford. The chief stone of a Free Library and Museum for Hereford has been laid. The new establishment is being provided at the cost of Mr. Rankin, of Bryngwyn Park. Mr. Bowers is the contractor.

TENDERS

Accepted for a new public house, at Linthwaite, for Mr. Samuel Stocks, Milnsbridge, near Huddersfield. Mr. John Barker, architect:—

Excavator, Mason, and Bricklayer.

Pearson	£472 10 0

Carpenter and Joiner.

Balmforth	£330 0 0

Plumber and Glazier.

Allison	£69 8 0

Plasterer.

Bottomley	£42 0 0

Slater.

Wilde & Son	£36 15 0

Painter.

Bottomley	£16 0 0

For erecting a warehouse in Bermondsey-street. Mr. George Legg, architect:—

Webster	£7,547 0 0
Conder	5,729 0 0
Little	5,321 0 0
King	4,615 0 0
Shurmur	4,594 0 0
Sharpington & Cole	4,497 0 0
Coleman	4,439 0 0

For erecting a warehouse, &c., at Rotherhithe. Mr. George Legg, architect:—

Webster	£18,535 0 0
Conder	17,947 0 0
Crockett & Dickson	17,800 0 0
Little	16,370 0 0
Coleman	16,017 0 0
Watts	16,000 0 0
Ennor	15,492 0 0
Sharpington & Cole	14,677 0 0
Shurmur	13,680 0 0

For the erection of schools for 500 children, and two residences at March, Cambridgeshire, for the March School Board. Messrs. Mumford & Townsend, architects:—

Rowling & Sharpe	£4,999 0 0
Broadhurst	4,774 0 0
Hutchinson	4,727 0 0
Feast	4,586 0 0
Fast	4,440 0 0
Swann (accepted)	4,100 0 0

For the construction of a piled quay-wall facing the river Hull, for Mr. Willows. Mr. Robert Clamp, architect:—

Hird	£477 0 0
Pearson	469 1 6
Evington	347 13 6
Clarke & Sons	330 0 0
Dosser, Nelson, & Weddall	326 0 0
W. & J. Hall	300 0 0
Sissons	290 0 0
J. & W. Leggott	286 0 0
Hudson & Shanks (accepted)	267 9 3

For St. Jude's Vicarage, South Kensington. Messrs. G. & H. Godwin, architects. Quantities by Messrs. Gardiner, Son, & Theobald:—

		Enclosure railing.
Jackson	£3,913 0 0	£227 0 0
Cowland	3,740 0 0	240 0 0
Adamson	3,730 0 0	233 0 0
Manley & Rogers	3,720 0 0	222 0 0
Nightingale	3,698 0 0	216 0 0
Dove	3,665 0 0	219 0 0
Hill & Sons	3,640 0 0	211 0 0
Avis	3,470 0 0	196 0 0
Henshaw	3,443 0 0	197 0 0

Additions to Devon House, Manor-road, Forest-hill, for Mr. John Drake. Mr. Alex. Graham, architect:—

Axford	£1,080 0 0
Langmead & Way (accepted)	1,054 0 0

Alterations to Red Lion public-house, for Mr. D. Hislop. Mr. J. Williams, architect:—

Langmead & Way	£450 0 0
Foster	440 0 0
Bricknel	421 10 0
Bridgman & Nuthall	409 0 0
Thompson	370 0 0

For painting and decorating Prince Alfred Tavern, Charrington-street. Mr. J. Miller, architect. Quantities not supplied:—

Mullin	£156 0 0 (!)
Cocks	130 0 0
Bridgman, Nuthall, & West	109 0 0
Foxley	107 10 0
Patterson	97 0 0
Purkiss (accepted)	59 9 0 (!)

For alterations and additions to No. 3, Charles-street, Long-acre, for Mr. Hislop. Mr. T. Williams, architect. Quantities not supplied:—

Langmead & Way	£450 0 0
Foster	440 0 0
Brickell	421 0 0
Bridgman, Nuthall, & West	409 0 0
Thompson	370 0 0

For building a warehouse for Mr. Charles Venables, New-street, Cloth-fair. Mr. Sanders, architect. Quantities not supplied:—

Capps & Co.	£936 0 0
King & Son	888 0 0
Read	876 0 0
Bridgman, Nuthall, & West	838 0 0

For alterations and additions to Nos. 19 and 20, Nicholas-lane, for Messrs. Green & Son. Mr. Geo. Legg, architect. Quantities supplied:—

Bridgman, Nuthall, & West	£1,638 0 0
Kent	1,354 0 0
Little	1,289 0 0

For alterations and additions to "Sandstone," near Uxbridge, for Mr. F. B. Garrard. Mr. Charles J. Shoppee, architect. Quantities by Mr. Sidney Young:—

Macey	£2,369 0 0
Gibson Brothers	2,081 0 0
Colls & Sons	1,994 0 0
Adamson & Sons	1,745 0 0
Fassnidge & Son	1,692 0 0
Kearley (accepted)	1,650 0 0

For alterations to the City of Paris, Old Ford-road, Bethnal-green, for Mr. James Ayton. Mr. E. Brown, architect:—

White	£448 0 0
Blackmore & Morley	417 0 0
Pringle	405 0 0
Marr	362 0 0
Christoffer Brothers	295 0 0
Aldous	278 0 0

For superstructure of the New Royal Hotel, Blackfriars, E.C., for Mr. P. de Keyser. Mr. E. A. Gruning, architect. Quantities by Mr. James Barnett:—

Myers & Son	£55,872 0 0
Jackson & Shaw	55,327 0 0
Ashby & Sons	55,295 0 0
Holland & Hannen	54,763 0 0
Conder	54,215 0 0
Rider & Son	53,920 0 0
Browne & Robinson	53,780 0 0
Trollope & Sons	53,468 0 0
Perry & Co.	52,300 0 0
Henshaw & Co.	50,827 0 0
Lucas Brothers (accepted)	49,790 0 0

For villa at Sydenham, for Mr. H. Grain. Mr. J. Norton, architect:—

Gooding	£2,508 0 0
Oldrey	2,440 0 0
Aitchison & Walker	2,395 0 0
Boden	2,390 0 0
Blandford & Jones	2,130 0 0
Blackmore & Morley	2,100 0 0
Keast & Co.	2,040 0 0
Clark	1,999 15 0
Guest	1,983 0 0
Tibbett, jun.	1,838 0 0

For alteration and new shop-front, Buckingham Palace-road. Mr. Shea, architect:—

Wagner (accepted)	£289 0 0

For alteration and new shop-front, for Mr. T. S Thwaites, Buckingham Palace-road. Mr. T. Withers architect:—

Wilks Brothers	£138 0 0
Wagner (accepted)	113 0 0

Micfield.—New schools, out-buildings, fence, walling, and master's house. For Mr. John Banks, architect, read Mr. John Barker.

TO CORRESPONDENTS.

Cracked Bells.—Will any of your readers kindly inform me if ther is any way of improving the tone of cracked bells? I am interested in a small church which has two such bells, and where it is almost impossible to raise funds for re-casting.—F. Ewen.

H. R. (sound and sufficient knowledge could not be obtained in the time named).—T. M. (paper was already in type).—J. S.—F. F.—R. W. P.—C. P.—T. L. W.—Sir R. M.—A. M. H.—R. M. R.—R. P.—S. B.—A. J.—J. B.—J. L.—J. J.—Sixty years of age.—M. P.—L.—R. M. T.—G. C.—Lord L.—W. P. G.—R. Brothers.—M. & K.—J. B.—J. G.—C. J. S.—H. R. W.—R. A. G.—R. L. R.—G. W. R.—G. W. U.—Gen. S.—E. B.—J. H.—S. C.—J. C.—Dr. M.—M. & T.—L. & W.—R. H. W.—B. & Co.—W. G. S.

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